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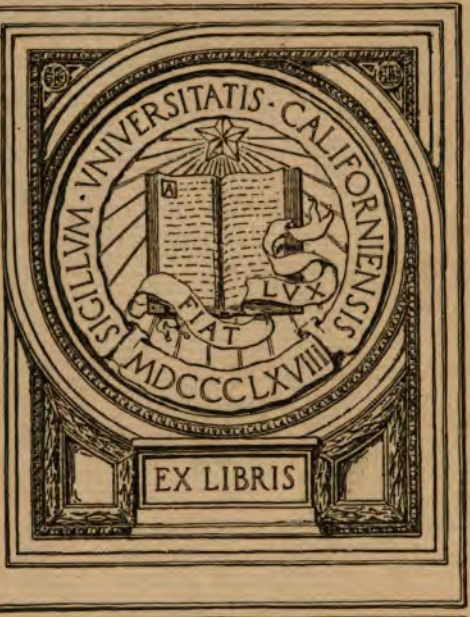

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65TH CONGRESS, 2d Session } SENATE { DOCUMENT No. 167

TRAINING OF TEACHERS FOR OCCUPATIONAL THERAPY FOR THE REHABILITATION OF DISABLED SOLDIERS AND SAILORS

LETTER

FROM THE

U.S. FEDERAL BOARD FOR VOCATIONAL EDUCATION

TRANSMITTING,

IN RESPONSE TO A SENATE RESOLUTION OF JANUARY 27, REPORT ON A STUDY OF THE FEDERAL BOARD ENTITLED "REHABILITATION OF DISABLED SOLDIERS AND SAILORS AND TEACHER TRAINING FOR OCCUPATIONAL THERAPY"

JANUARY 30, 1918—Referred to the Committee on Education and Labor and ordered to be printed

WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

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65TH CONGRESS,
2D SESSION.

S. RES. 189.

IN THE SENATE OF THE UNITED STATES.

JANUARY 28, 1918.

Mr. SMITH of Georgia submitted the following resolution; which was considered and agreed to.

RESOLUTION.

Resolved, That the Federal Board for Vocational Education be directed to furnish to the Senate such information as it may have or can readily obtain on the rehabilitation and vocational reeducation of crippled soldiers and sailors.

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LETTER OF TRANSMITTAL.

FEDERAL BOARD FOR VOCATIONAL EDUCATION,
Washington, January 29, 1918.

SIR: The Federal Board for Vocational Education is in receipt of the following resolution of the Senate of January 28, 1918:

Resolved, That the Federal Board for Vocational Education be directed to furnish to the Senate such information as it may have or can readily obtain on the rehabilitation and vocational reeducation of crippled soldiers and sailors.

Pursuant thereto there is herewith transmitted a study by the Federal board entitled "The rehabilitation of disabled soldiers and sailors, and teacher training for occupational therapy."

Respectfully,

JAMES P. MUNROE,
Vice Chairman.

Hon. THOMAS R. MARSHALL,
President United States Senate, Washington, D. C.

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REHABILITATION OF DISABLED SOLDIERS AND SAILORS—TEACHER TRAINING FOR OCCUPATIONAL THERAPY.

FOREWORD.

Not the least of the war problems in the field of vocational education is the industrial rehabilitation of the disabled soldier and sailor. Realizing that if the United States was to avoid the serious mistakes made by several of the belligerent nations in their early attempts to solve this problem, the Federal Board for Vocational Education, on August 16, 1917, authorized its research division to investigate thoroughly and at the earliest possible moment the entire question of the rehabilitation of war cripples.

A preliminary survey of the experience of the European nations since the beginning of the great war had convinced the board that it was necessary to develop facts from every source for the formulation of a broad and comprehensive plan for the restoration of men, handicapped as a direct outcome of their military employment, to useful industrial employment. This study aims, therefore, to build upon such information as was available before the war, to enrich and complete it with the abundant foreign experience gained since the war, and to anticipate the problems of demobilization which will far outlast the war itself and which will conserve in handicapped labor a resource of great economic value.

Rehabilitation, whether of the war or of industrial cripples, depends to a large extent on the practice of occupational therapy during convalescence. In the present moment of preparation the United States discovers at once the great need for occupational therapeutists and an equally great shortage in the supply. It is the principal purpose of the study presented in this document to attempt to meet this situation, to show what methods Europe, after costly experiment, has found to be the best, to outline courses for the emergency training of teachers, and to map out the essentials of a complete national program of rehabilitation.

This study was made by Elizabeth G. Upham, under the direction of Charles H. Winslow, Assistant Director for Research. Acknowledgment for valuable suggestions is made to Dr. William Rush Dunton, jr., President of the National Society for the Promotion of Occupational Therapy and Instructor of Psychiatry, Johns Hopkins University, Baltimore; to Dr. J. Madison Taylor, Associate Professor of Nonpharmaceutic Therapeutics in the Medical Department of Temple University, Philadelphia; to Dr. Frankwood E. Williams, Vice Chairman of the Mental Hygiene War Work Committee of the National Committee for Mental Hygiene; to Dr. Shepherd Ivory Franz, Chairman of the Committee on Rehabilitation of Maimed and Crippled of the Council of National Defense; to T. B. Kidner, Vocational Secretary of the Canadian Military Hospitals Commission, and to officers of the Surgeon General's Staff of the War Department.

C. A. PROSSER, *Director.*

INTRODUCTION.

Disabled soldiers and sailors are now returning to the United States from the theater of war, and the situation created by their return is one that calls for immediate action by the Federal Government. The purely emergency problems involved in the question of the industrial rehabilitation of these men, great as they are, are only a part of the ever-present problem arising from the fact that a much larger number of men are annually crippled and handicapped in the ordinary course of industry. The present study attempts to analyze broadly the fundamentals of these problems, emphasizing particularly, however, the more pressing military aspects. It is to be hoped that whatever program may be adopted will serve not for the period of the war alone, to be discarded at its close, but also for the solution of the rehabilitation of the industrially handicapped.

Between the time when the disabled soldier or sailor enters the hospital and his final placement in industry, commerce, agriculture, or less frequently in the special workshop or home, there lies a long period of reeducation and adaptation. In this period such terms as "invalid or bedside occupations," "occupational therapy," "curative workshop," and "vocational education" are commonly used. Each of these terms refers to some process of the rehabilitation. The distinct function of each, however, their overlapping and interdependence are but vaguely understood, and therefore require definition.[1]

The different disabilities, physical and mental complications, the capabilities and experiences of the disabled soldier or sailor, are such that the problem of his rehabilitation is in each case an individual problem, and complete standardization of either medical or occupational treatment is impossible. In the main, however, the average program for a man incapacitated for further military service overseas may be described as follows:

First, a period of acute illness or surgical care; second, a period of convalescence, frequently of long duration; third, vocational reeducation. These stages may merge imperceptibly into one another or they may be separate and distinct. In many instances one or two of the stages may be altogether omitted.

---

[1] A confusion exists between invalid or bedside occupations and occupational therapy. Institutions offering instruction to teachers in occupational therapy are giving identical courses with those offering instruction in invalid occupations. Invalid or bedside occupations may be used interchangeably, as they cover the same field. It has been expedient in this study to draw the distinction between invalid occupations and occupational therapy, reserving for occupational therapy work of a serious and educative type. The therapeutic value of invalid or bedside occupations is, however, fully appreciated. It is impossible to give a complete list of all the institutions and hospitals in this country offering courses in "invalid occupations." Notable among them are:

The Experimental Station of Invalid Occupation, conducted by Miss Susan E. Tracy, Jamaica Plains, Mass.

Dr. Wm. Rush Dunton, jr., course for nurses at the Sheppard and Enoch Pratt Hospitals, Towson, Md.

Columbia University, department of nursing and health.

The Red Cross class conducted by Mrs. Eleanor Clarke Slagle in Chicago.

The Chicago School of Civics and Philanthropy, in cooperation with the Henry B. Faville School of Occupations, is offering a course for institutional workers.

The Henry B. Faville School of Occupations of the Illinois Society for Mental Hygiene offers a course in training teachers for invalid occupations and occupational therapy. It gives instruction in occupational therapy to the extent that many of the materials handled are the raw materials of industry and the patients learn machine processes and the use of lathes.

As a rule the acute condition will occur overseas unless complications or surgical operation take place after the patient has been transported to the United States. Patients who are permanently disabled for further military service will be brought to this country as soon as their condition permits, thus relieving hospital congestion in France. In this country, furthermore, not only are supplies, care, and the elaborate equipment needed for many types of recovery accessible, but the technical schools and shops for vocational training are or will be at hand. As the patient recovers from the first acute convalescing, he may be given "invalid or bedside occupations." Occupational therapy and the curative workshop are invaluable in the period of convalescence, while vocational education follows physical recovery, and is the final stage in rehabilitation. The three stages are necessarily distinct in their function, and call for distinct methods of teacher training and different kinds of equipment. They respond by improved conditions."[1]

During the close of the first, or acute, stage of illness invalid occupations is sometimes the treatment. This is desirable in cases when the patient's disability necessitates his staying in bed for a considerable length of time. Not only will the time pass more quickly for the patient so employed but his mental outlook will be improved, and even in severely restricted positions certain activities will prove a physical benefit. The period of invalid occupations is perhaps the least important of the three stages in rehabilitation, since it usually covers the shortest period and marks the interim when the patient is contending against the greatest number of limitations. The special object of invalid occupations is to help the wounded man feel that he is not wasting time and to save him from self-pity and a brooding condition of mind. Even those who accept their condition with heroism and philosophy become depressed as a result of the long waiting to get well. Depression, inertia, and worry aggravate physical conditions, and the chief duty of the instructor of invalid occupations is to shorten the period of unproductiveness and worry, and if he can "prove to the patient who chafes against his limitations that there is really a broad highway of usefulness opening before him of which he knew not, the mental friction is diminished and satisfaction steals in, while the whole physical organism prepares to respond by improved conditions."[1]

While the occupations given in this early stage of recovery may have a therapeutic effect, they can not always be of practical value to the patient's economic future inasmuch as the field of invalid occupations is limited to the bed patient or to the patient unable to attend classes in the curative workshop. They should not be confused with occupational therapy, which is more comprehensive and belongs properly in the second or convalescing stage of rehabilitation.[2]

---

[1] Studies in Invalid Occupations, by Susan E. Tracy.

[2] The first stage was not considered in the resolution passed at the interallied conference held in Paris, May 8–12, 1917. The following two stages were considered and differentiated as provided by resolution No. 43:

"The reeducation of the wounded falls into two periods:

"1. That of functional restoration by work, the object of which is to cure the wounded, prepare them for instruction, and encourage them to work.

"2. That of technical reeducation, which begins as soon as the injuries are healed and is intended to restore morally, intellectually, and practically those who have limbs."

Occupational therapy is the science of healing by occupation, and the curative workshop is the shop where the convalescing patients are given occupational treatment. Occupational therapy is designed to cover the long and tedious periods of convalescence when the patient is able to be about, when medical treatment occupies only a part of his day, but when it is necessary for him to be under the strictest medical supervision. Long convalescence is characteristic of many of the disabilities of the disabled soldier or sailor, such as general debility, heart trouble, nerve disorders, tuberculosis, rheumatism, injuries requiring orthopedic treatment, etc.

Vocational training takes place on the completion of convalescence or when the patient has sufficiently recovered to be permitted to follow a prescribed course of study. Upon vocational training depends the employability of the man and his value as a producing agent.

Important as is this final stage in rehabilitation, its success depends upon what has been accomplished by occupational therapy in the curative workshop. What is done during the convalescent stage forms the vital link between medical treatment and vocational education or economic adjustment. It is the critical and most important of the three stages. During this period, ambition, the desire for self-support and economic usefulness may be fostered, replacing the despair, apathy, and dependence often experienced. This is, moreover, the period when the patient regains the functional use of his body. The extent to which he becomes reeducated and the purpose and end to which that reeducation is directed make not only possible vocational education but industrial rehabilitation as well. While many of the patients will have the opportunity to complete the training begun in the curative workshop in the vocational school, many others will be able to go directly into wage-earning occupations. The period of occupational therapy must, therefore, be used to prepare and adjust many patients to civilian life.

Occupational therapy has suddenly received world-wide recognition as a factor indispensable in the rehabilitation of wounded soldiers and sailors. The participation of the United States in the war and the establishment of an elaborate system of reconstruction hospitals designed to rehabilitate the disabled, necessitate the erection of curative workshops and the training of teachers of occupational therapy. It is timely, therefore, that serious attention be given to the study of occupational therapy in order to determine the qualifications of its teachers, to ascertain its function, its effect upon war invalids, and its social and economic aspects.

PART I.

THE PROBLEM OF TRAINING TEACHERS.

The problem of training instructors to meet the war need, for teachers capable of directing occupational treatment, must be studied first from the point of view of the number involved and the probable number of teachers required; second, special problems encountered in dealing with war invalids; third, qualifications of the instructors; and fourth, course of training for teachers.

Canadian experience, upon which the figures for this country may be based, estimates that 10 per cent of the men sent overseas are returned unfit for service. Thirty per cent of these are in the hospitals at one time. This means that for every 1,000,000 men sent overseas, 100,000 will come back permanently disabled for further military service and approximately 30,000 will be in the hospitals at one time. The majority of these will be convalescent patients. Four instructors are estimated in Canada to every 100 convalescent patients. Canada is endeavoring to increase the number of instructors.

In Canada the men go to the shops in relays, and the classes run from 16 to 20 men, often, however, considerably less. Allowing 4 teachers to every 100 men, 1,200 occupational therapeutists would be needed for every million men overseas. If the United States maintains an over-seas army of 5,000,000, 6,000 instructors will be required. For the best results there should be a higher percentage than 4 instructors for every 100 men.

The war invalid presents a problem that is distinct from that of the civilian patient or the industrially handicapped. The industrially handicapped person is more frequently alone and unaided. The war invalid, on the contrary, has served his country, and the Nation stands ready to help him. At his service are a multitude of resources and agencies. In case of serious injury, the pension relieves him from apprehension as to the future. The training during convalescence comes at a time when mentally and physically he is most responsive, provided he is stimulated; and the military authority which it is possible to exercise over him, but not over a civilian patient, has the advantage of controlling the stubborn and willful patient for his own advantage.

PROBLEMS IN TEACHING THE WAR INVALIDS.

The records reveal that a few of the patients take the attitude that they have done their part and that others may look out for them in the future. The majority of the men, however, have self-respect

and confidence; they have made good in the face of danger, and return handicapped but determined to make the best of their condition. The care, guidance, and patriotic attitude of the public, together with the consciousness on the part of the patient that he has served his country, help to simplify the problem of the returned soldier or sailor. The instructor who understands how to approach the sick, who has sympathy and understanding not only with the subnormal but with the peculiar mental attitude of the war invalid, and who knows how to talk his own language to him, will find the disabled man a responsible and willing student.

There are, however, certain difficulties in teaching the war invalid which do not exist to the same extent in the case of the civilian patient. The physical handicap is likely to be serious, and in many cases constitutes a permanent disability. The instructor must therefore take his past into consideration, aiming to reduce the permanent handicap to the minimum and to increase to the maximum the remaining faculties of the patient. In addition to the physical disability, the mental and nervous conditions brought on by the strain of trench warfare complicate the problem. In the case of men whose mental and nervous condition appears quite normal there will be found to be a mental sluggishness, a lack of concentration, and a nervous fatigue which is the logical outcome of the experience of modern warfare. Although many of the men are young enough to be teachable, the instructor, to be successful, must understand the psychological condition of the disabled soldier or sailor.

Many of the common disabilities involve either amputations or inability to use a member. Cheer and helpfulness are needed in the exercise of a stump or in teaching a man to be skillful with his left hand.[1] In many cases there is no amputation, but the limb has ankylosed or remained inactive over a long period, and here again time, patience, and encouragement are constantly needed in order to develop the first feeble muscular exertions into forceful and productive movements.

The fatigue and debility suffered by many of the patients prevent long-continued activity, and the instructor must understand the therapeutic value of the occupation to these patients, realizing that this value can not be measured in the shop by the tangible results possible to obtain in some cases.

The administering of occupational treatment in the cases of shell shock, war neuroses, and psychoses requires the most expert skill and understanding of the delicate balance and relation of motor functions to the central nervous system.

The totally blind and deaf are fortunately few. Sudden blindness or deafness coming to an adult renders the victim far more helpless than would be the case with a child who has never had these senses, or with an adult who has developed a certain adjustment through their gradual loss.

[1] The method devised by M. Tamenne, a Belgian refugee, who has educated his left hand most proficiently and teaches handwriting, shorthand, and typewriting to those who have lost the use of their right hands at the Ecole Professionelle de Blessés at Montpellier, is described in the Lancet for Apr. 7, 1917. M. Tamenne emphasizes the psychological value of having the pupil write as nearly like his former hand as possible. Thus he has an unconscious means of comparison, and when he has imitated his normal handwriting he no longer feels disabled. M. Tamenne also notes the necessity of giving the patients confidence, and of teaching them to consider their loss not a disability, but an inconvenience which may be overcome.

The blind[1] must be "taught to be blind," to accept their lot as an inconvenience, not as a disability. Intelligent sympathy, not pity, will assist them in becoming independent. Blindness imposes a severe nervous strain which must be safeguarded. The method of teaching typewriting and Braille to the blind soldier or sailor is the same as teaching any victim of blindness. It must not be supposed, however, as is popularly understood, that the sudden loss of a sense develops a corresponding sudden acuteness of the other senses. The sudden loss of sight is in itself a paralyzing experience, for in addition the hearing has often been dulled by the bursting of shells and exposure, and the manual and rough work of army life has calloused the hands so that many patients do not possess a sensitive touch. The blind soldier or sailor requires a specially trained teacher for the blind, and, in addition, one with great patience and appreciation of the particular handicap of the war invalid.[2]

Under the head of deafness should be included both the dull of hearing and the totally deaf. A resolution passed May 11, 1917, at the interallied conference held in Paris states that "lip reading should be regarded as the only useful method of reeducating those who are totally deaf." Trained teachers of the deaf are the only ones who should be intrusted with the difficult task of teaching lip reading. After first learning the lip picture of a few written words, the patient is taught to read forms of speech of the first and second articulation point and is then instructed how to distinguish different sounds at the same site of articulation. Enthusiasm must be maintained, though the difficulties of lip reading for the adult patients must not be minimized. As the patient learns to read lips, simple, interesting sentences and stories must be recited, preferably those relating to experiences with which he is familiar.[3] The patient should be taught from objects, motions, and concrete examples. This treatment applies to the totally deaf whose condition is organic. There is also a group of extremely deaf war invalids whose difficulty is mainly functional. Such cases respond to the occupational treatment of war neuroses. For such patients "a course of soothing and fortifying treatment with the judicious application of psychotherapeutic methods and organized work may produce unexpectedly brilliant results."[4]

Although the concussions, head injuries, and vicissitudes of the war do not cause total deafness in many cases, they often result in defective hearing. The returns from 12 English military hospitals

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[1] Resolution 87a, passed May 11, 1917, at the interallied conference, provides that "The creation of small workshops near ophthalmic centers and ophthalmic departments in hospitals should be made compulsory."

[2] The great success of Sir Arthur Pearson's work with the blind at St. Dunstan's, England, and the rapidity with which the men learn, has been attributed to the fact that he favors blind teachers as instructors. He himself is blind. The men are encouraged and stimulated to learn from one who has experienced the same disability. The following is an extract from a letter written by Helen Keller to the American-British-French-Belgian permanent blind relief war fund:

"In order really to console and help the blind, we must take into account their particular needs, their peculiar difficulties, their individual capabilities. * * * Their lot is so horrible" (the maimed as well as blinded) "that any effort to break through their isolation and cheer them must be precious beyond our powers of comprehension. * * * If we have the will and courage to face the dark, a gentle warmth steals into our fearful hearts. * * * We are so constituted that we can adapt ourselves to almost any condition if only a friendly hand is reached out to us, if we only hold fast to our faith in the conquering might of the spirit."

[3] The method of Director Kroiss, of Wurzburg, is described in Recalled to Life, June, 1917.

[4] A memorandum prepared by Sir Alfred Keogh, G. C. B., director general, army medical service for the Anglo-Belgian committee.

show that 1.4 per cent of the patients suffered from some form of deafness. Two German Army corps showed a percentage of disease or injury to the ear as high as 7.5 in a year. Many of these cases are capable of improvement, and total deafness may be prevented. While lip reading is desirable for many of these cases, it is important that the patients use and exercise what hearing they have and take advantage of all mechanical appliances for the deaf. It is a characteristic of the deaf to be depressed and expect favors on account of their deafness. Since deafness does not prohibit men from entrance into many gainful occupations, it is necessary that the instructor be not only versed in the technique of instructing the deaf, but that he also know how to use and develpo any fragments of hearing left and overcome any natural unfavorable tendencies of temperament occasioned by the deafness likely to handicap a man in securing employment.

READJUSTMENT TO CIVIL LIFE.

The instructor of disabled men has an ambitious purpose to accomplish in the curative workshop. The military discipline to which the men have long been accustomed renders difficult the adjustment to civilian life. This period may be made less trying if the instructor develops individual thinking and initiative in the patients. The recourse to military discipline in the curative workshops should be rare. Control of the war invalids should lie in the instructor's ability to interest them, to teach them, and to develop in them regular habits of work, habits which are self-disciplinary and which will render the men valuable members of civil communities.

French experience has established very clearly that the selection of the right type of teacher is vital to the success of any scheme of training. The ordinary technical instructor who understands his subject but not his pupils is quite useless. Teaching the physically defective is not perhaps so difficult as teaching the mentally defective, but it requires much the same qualities, the same inexhaustible patience, the same blending of sympathy and firmness, and, above all, the power of appreciating the idiosyncrasies of the different pupils. The ideal instructor must know his men as well as his trade. He must study their peculiarities and be able to vary his methods so as to get the best out of each man.[1]

The fact that the majority of the war invalids will partly, if not wholly, recover makes the task of instruction hopeful. Inasmuch, however, as their economic independence depends to a large extent upon the occupational therapy of the convalescent period, there is imposed upon the instructor a heavy responsibility not only to help the patient to get hold of himself and thus to facilitate his recovery, but to furnish him with that accurate knowledge which will be his vocational equipment.

Canadian figures show that 80 per cent of the disabled men are able to return to their former industry without vocational training, that 10 per cent need complete vocational reeducation, and 10 per cent partial reeducation. It therefore follows that 80 per cent of the men receive no further instruction after leaving the curative workshop and that 20 per cent receive varying degrees of vocational reeducation. The last opportunity which the Federal Government

[1] L. G. Brock, in American Journal of Care for Cripples, Vol. IV, No. 1.

will have to assist these 80,000[1] men who need no further vocational education in the task of adjusting themselves to civilian life and to the demands of industry will be during the period of convalescence in the curative workshop. The problem of the curative workshop is, then, twofold—first, to provide those occupations which may facilitate the patient's recovery from a therapeutic point of view; and, second, to make those occupations so far as possible of such a practical type that the patients may add to their industrial equipment. Intelligence and skill is the workingman's capital. The fact that these men are returned unfit for further military service indicates that they are subnormal in some slight measure, if not seriously and permanently handicapped.

In addition to those men who will become employable on hospital discharge, there are 20 per cent who can only become so after partial or complete vocational rehabilitation. Since many of these men must spend a long convalescence in the curative workshop before they are able to take up vocational education, it will save time and expense to make the course of instruction in the hospital workshop prevocational to the course which the patient will subsequently follow. If such a course can not present the exact processes, either because of lack of equipment or inability on the patient's part to perform such work at this period of his recovery, it may at least contain allied and academic subjects which will form a valuable background to technical training.

In the hospital workshop there will be a few men who will never be able to compete in industry and for whom provision will have to be made in special workshops.

A special workshop should have a rest room with a nurse or doctor in constant attendance. It should have as many comforts as possible in the way of special devices, foot and back rests, etc. The hours will have to be adjusted to each patient. Attendance should be as regular as possible and discipline should be consistent with the patient's physical condition. There should be classes in connection with the shop, so that the patients may increase their skill and so that other handicapped persons may improve their time while out of employment. Every effort should be made by those in authority in the special workshop to secure employment for the patients outside the shop whenever it is possible to do so. The patients should receive a small return for their work, and the character of the work should be distinctly commercial and should compete fairly with normal prices. In all probability these shops can not be self-supporting, since labor is necessarily dependent upon the irregularity and uncertainty of men so seriously incapacitated that they can secure employment in no other way. The deficit incurred by such an establishment may well be borne by the Federal Government and regarded as an economy in comparison with the older methods of caring for such cases in soldiers' and sailors' homes, where the men are maintained in idleness and subject to mental and moral deterioration. The cases for the special workshops are fortunately so rare after the modern method of hospital treatment that they are negligible in number.

[1] On the basis of a million men overseas, Canadian figures give 10 per cent, or 100,000 men, returned unfit for further military service; 80 per cent of them, or 80,000, are able to return to industry without vocational education.

The Lord Roberts Memorial Workshops, established in London, are special workshops for this class of men. In the first year a profit of £900 was made after meeting all expenses and after paying £16,000 in wages to the men and their dependents.

There will be a few paralytics and bedridden patients who will never be able to attend even special workshops for the handicapped. Bedside and invalid occupations may pass the time and be a palliative measure for this last group.

CLASSIFICATION OF DISABLED MEN ACCORDING TO IMPAIRMENT OF WORKING CAPACITY.

The following classification of the three groups of patients in the curative workshop shows the degrees of disabilities in relation to impairment of earning capacity and clarifies the purpose and function of occupational treatment in relation to each group.

(*a*) *Men not able to compete in normal occupations under any conditions.*—Men sufficiently disabled to prevent competition in any normal occupation so that they will be employable only in special workshops upon hospital discharge. For this group invalid occupations and even occupational therapy can be both a palliative measure and an economic policy within limited restrictions. It can pass the time, keep the patient contented, and later, under supervision in special workshops, enable him to be partially self-supporting.

(*b*) *Men not able to compete after completion of medical treatment.*—Men not able to return to former occupations on completion of medical treatment but able to become self-supporting in new vocations. Occupational therapy is of the greatest value to this class. Not only may it accelerate their recovery, but the training received in convalescence may be made a part of the preparation for their new vocations. The economy, efficiency, and success of training lie in making the therapeutic requirements for mind and body in convalescence coincide with preparation for vocational education, if not the actual vocational training itself. (It is, of course, understood that the physical condition of patients in the curative workshop prevents them from attending regular vocational schools.)

(*c*) *Men able to compete after completion of medical treatment.*—Men able to return to former vocations on the completion of medical treatment. Regulated activity and wholesome habit of work, is designed chiefly to facilitate recovery. Whenever it is possible, general education classes and practice in the workshop should increase the patient's economic equipment by greater knowledge of the occupation with which he is already familiar, and to which he intends to return when cured. While many of the patients will be learning to perform their old occupations better, many others must go through the torturous period of strict reeducation, not in the sense of learning a new occupation, but in learning to perform an already familiar one under severe limitations.

It is now clear that there are three different kinds of classes in the curative workshops at the same time. Moreover the length of time each patient may work, the extent to which he may exert himself, and the kind of exercise prescribed must be determined in each case by the individual. Mr. T. B. Kidner, vocational secretary of the Military Hospitals Commission of Canada, has pointed out the desir-

ability of having the classes separated not only according to subject, but according to the earnestness with which the men may work. Men who are capable of applying themselves to serious vocational study, although still in the curative workshop, should not be mixed with those who are taking training merely for its therapeutic value or with those who are incapable of making even a fair degree of progress. For instance, many of the men may not be able to apply themselves seriously during convalescence, whereas a few may be able to work fairly hard and receive great benefit from a vocational course leading directly to a trade. Such patients must not be held back or they will develop lazy habits of work and cost the Government unnecessary expense by lengthening the period of training.

The curative workshop must be a departmental institution in which there are many occupations affording a wealth of choice both from the medical and economic points of view. This is necessitated by the different interests, possibilities and handicaps of the men. In many cases a rudimentary or even a higher education is advisable. In other cases there should be classes in commercial education, printing, drafting, salesmanship, agricultural pursuits, motor mechanics, and skilled trades. While the instruction must be individual and the condition and fatigue of the patient must form the basis of the teaching in each case, those men should be grouped together of whom the same relative degree of progress can be expected.

It is therefore evident that the director must be familiar with the instruction of these groups and with a wide range of subjects. He must necessarily possess the qualifications of the manual-training teacher. The scheme of training of the men should be organized so as to train large groups of people at one place rather than small and scattered groups at many places. This will make possible effective use of the coterie of teachers who are specialists in their lines. The common practice of schools with schemes of recitations and assignment of work can be followed on the basis of what the different teachers are able to contribute.

The chart on page 22 indicates the stages of occupational treatment and teacher training in relation to each group of men. It shows the present resources for training each group, the sources from which teachers may be recruited and the practical experience necessary for each group.

Stages of occupational treatment in hospitals and teacher training.

	Classes of men.	Occupational treatment.	Present resources for training.	Sources for recruiting teachers.	Practical experience necessary.
I	Men unable to go to curative workshop. Men permanently invalided.....	Invalid occupations.....	Schools existent in cooperation with the Federal Government.	Nurses, craft, and art teachers, trained women.	Experience in hospitals or institutions.
II	Men able to work but unable to compete in any line. Men in special workshops for this class.	Occupational therapy: 1. Simple occupations.....	Schools existent in cooperation with the Federal Government.	Trained and selected women of education with previous experience in art, craft, and semitrades.	Experience in hospitals, institutions, or Canada.[1]
III	Men who must learn new occupations (approximately 20 per cent).	Occupational therapy: 1. Simple occupations..... 2. General education..... 3. Prevocational education.. 4. Vocational education.....	Same as II..... Nonexistent..... Nonexistent..... Nonexistent.....	Same as II..... Educated men and women (teachers). Instructors in manual training, commercial subjects, mechanical drawing, drafting, etc. (preferably men). Vocational teachers (men); men from Canada.[1]	Same as II. Hospitals, institutions, or Canada.[1] Canada.[1] Canada.[1]
IV	Men able to return to former occupation (approximately 80 per cent).	Occupational therapy: 1. Simple occupations..... 2. General education..... 3. Vocational reeducation...	Same as II..... Nonexistent..... Nonexistent.....	Same as II..... Educated men and women (teachers). Vocational teachers (men).....	Same as II. Hospitals, institutions, or Canada. Canada.[1]

[1] Military hospitals of Canada.

ORGANIZATION.

This country is confronted with the task of preparing teachers for each group of disabled men. Aside from invalid occupations, little attention has been given in the United States to the various phases of this great problem. Not only are few teachers available to start the work in the first hospitals, but there are few people experienced in the preparation of such teachers. Some hospitals have the beginnings of equipment for invalid occupations but few are provided with curative workshops. Furthermore, this country has no background of experience for dealing with the subject, and for this reason it will be necessary at the outset to resort to Canadian hospitals for observation and practice work. The knowledge of the allies was gained from actual experience with the problem, which has been costly in time, money, and wasted human efficiency.

Such a comprehensive plan as is demanded by the present emergency can only be met by the Federal Government. In no other way can a uniform standard of qualification of teachers be secured. Private institutions, with their inadequate hospital facilities, school equipment, and lack of teaching staff, are incapable of meeting the situation. Moreover, since these institutions will be under the direction of some agency of the Federal Government yet to be determined, it is imperative that the classes preparing teachers of disabled men should be controlled, directed, and supported by those directing their future work.

In order to meet the difficulty of preparing people for occupations that are not at the present time followed in this country, the principle should be asserted that these people will be trained to follow a vocation, and that that vocation is the teaching of the handicapped. Every principle already set up in this country—such as, for example, those established under the Smith-Hughes Act with regard to training for vocations—holds true for the training of teachers of disabled men.

These principles of vocational education are:

(1) Effective preparation for a vocation requires, first, practice; second, experience, with proper theory.

(2) In order to determine what shall be taught persons preparing for any vocation, including teaching, the demands of the occupation are the first consideration. The organization of the work, the course of study, and methods employed should be constantly determined and shaped by this consideration. Only in this way can training be made direct and effective.

(3) In any scheme of training for a vocation every requirement of the occupation should be dealt with in the course. This may be accomplished either by setting up entrance requirements of such a character as to insure that the student already possesses a certain amount of training. This means, for example, that if it be determined that instructors of disabled men must have a certain amount of manual, industrial, trade, or technical skill and knowledge, hospital observation and experience, or practical experience in invalid occupations or curative workshop; or else experience in the vocational education of disabled men, together with an elementary knowledge of the medical, mental, economic, and sociological problems involved;

then this training must either be given in the course or as much of it required before entrance as is practicable. In order to accomplish results, courses which are short must necessarily have high entrance requirements.

(4) It is a well-founded law of psychology that a teacher can not successfully confer on others that which he himself has never experienced. Vocational education the world over has come to recognize that instructors of vocations must themselves be experienced in the vocation which they teach. This principle has been written into the Federal law. It is recognized by every agricultural and mechanical college in America, and by every private and public trade, technical, and engineering school. Not to observe it would be to violate a quarter of a century of experience in vocational education gained on both sides of the Atlantic.

Applied to the teachers of disabled men, this means that they must be persons of experience in the subjects which they teach, and in addition possess special preparation qualifying them to meet the particular problem of the handicapped men. The first task confronting the United States at this time is to select and train the teachers of teachers of disabled men, and allow them practical experience in Canadian hospitals.

SELECTION OF INSTRUCTORS FOR INVALID OCCUPATIONS.

The first instructors to be trained should be carefully selected from the standpoint of their education, previous experience, and occupational or technical knowledge. They should be chosen with the idea that they are to become directors of other training centers established by the Federal Government. They should meet as far as possible the different entrance requirements for teaching the various groups of men as outlined in the chart on page 22.

Teachers of invalid occupations and simple occupations may be found who have had theoretical training and practical experience. Technical and skilled instruction is not so much needed in teaching invalid occupations, though the instruction so far as it goes should be correct, as is tact, resourcefulness, patience, contact with the sick and a knowledge of the medical problems involved. Before such teachers will be permitted to direct the work of invalid occupations and simple occupations in the first Government hospitals for the disabled, or to train other teachers for teaching the disabled, they must qualify in a short intensive course of not more than four weeks offered by the Federal Government.

SELECTION OF INSTRUCTORS FOR OCCUPATIONAL THERAPY.

The teachers of academic subjects of an elementary nature will be found in the ranks of educated men and women, especially those who have had teaching experience. A course of four weeks' study of the medical and social problems involved in teaching the disabled soldiers, together with practical experience in teaching the subnormal, will serve as preparation for this group.

Teachers of prevocational and vocational subjects in the curative workshops may be recruited from manual training teachers, from men who have had technical knowledge in the teaching profession,

and from the ranks of skilled workmen, foremen, and superintendents who are quick to learn and have developed teaching ability by helping their fellows.

Such a group of picked men[1] will be able to take an emergency course. The course of study should include five lectures each week, a written test on the lectures and correlated reading on some phase of the problem of rehabilitation. The lecture period should be followed by classroom recitation or an informal discussion of the subject, including the reference reading. The student should be required to keep a notebook of both lectures and reading. Each student should have a weekly conference with the instructor and should understand thoroughly the corrections on the written test. The final examination, weekly tests, notebooks, and recitations should form the basis for marking.

The following course of study is divided into weeks according to the subjects covered. It will be followed by practical experience in Canadian military hospitals.

COURSE OF STUDY.

I. The problem of rehabilitation.

1. Survey of problem of rehabilitation from the wounding in the trench to placement in industry.

2. The three stages of rehabilitation: Invalid occupations, occupational therapy, and vocational education. Function and scope of each.

3. Medical, social, and economic problems to be encountered in rehabilitation.

4. Psychology of the disabled soldier.

Discussion and reading should develop the point of view necessary for the instructor. The reading should include accounts of rehabilitation in foreign countries, selected chapters from One Thousand Homeless Men, by Solonberger; Social Service in Hospitals, by Ida Cannon; and The Work of Our Hands, by Herbert J. Hall.

II. Study of occupational therapy in convalescent cases of internal diseases, injuries, and postsurgical treatment (not orthopedic).

1. Physiological effect of muscular activity on the heart, lungs, circulation, digestion, etc.

2. Important points in the medical treatment of heart trouble, tuberculosis, and common diseases.

3. Relation of occupation to each of the above disabilities.

4. Relation of work and fatigue and indications of fatigue.

Reading should include references from Fatigue, by Mosso, researches by Prof. Amar, and medical authorities on various diseases, etc.

III. Study of occupational therapy in relation to orthopedic treatment.

1. Physiology and anatomy of bones, tendons, muscles, ligaments, and peripheral nerves.

2. Relation of occupational therapy to orthopedic surgery, physiotherapy, mechano-therapeutics, and massage. Danger of wrong exercise or strain.

[1] "Men" is used in its generic sense.

3. Occupational therapy in cases of amputations, exercise of stumps, study of Amar and other tests, etc.

4. Value of exercise in reeducating disused and stiffened parts.

5. Exercise in spite of permanent ankylosis, and in relation to prosthetic appliances.

Reading: References from the American Journal of Care for Cripples, from Prof. Amar's researches, and selections from medical journals.

IV. Study of occupational therapy in mental and nervous disorders.

1. Study of the central nervous system.

2. Pathology of neuroses and psychoses.

3. Study of motor functions in relation to nervous system.

4. Effect of occupation, fixing the attention, interesting the patient, directing channels of thought, observing methods of work and ways of cooperating with the physician.

Reading: References from Mental Hygiene, and writings of Drs. J. Madison Taylor, William R. Dunton, jr., Herbert J. Hall, Thomas W. Salmon, etc.

V. Technique of occupational therapy.

1. How to relax, stimulate, and coordinate the brain; how to concentrate the mind; how to restore self-confidence and overcome depression, indifference, and excitability.

2. General exercises, exercise of certain parts, and kinesiology.

In addition to reading from selected medical authorities, the student must prepare a list of processes from agricultural or commercial or industrial pursuits which may be suitable for relaxing, stimulating, coordinating, or concentrating the mind, and which may be used to restore self-confidence, overcome depression, indifference, and excitability. The student must select processes from one of the above pursuits which will serve for general exercise and for exercise of special parts.

VI. Study of occupations in relation to occupational therapy.

1. Analysis of industrial, commercial, and agricultural occupations in terms of therapeutic values.

2. Modification of processes, special devices and tools for special needs and fatigue prevention.

The student must list common occupations in agricultural, commercial, and industrial pursuits, with reference to those occupations particularly suitable for various disabilities and combinations of disabilities, with possible machine devices and tool modifications for handicaps.

VII. Methods of teaching.

1. Principles involved in teaching handicapped persons and disabled soldiers.

2. Methods of presenting processes and occupations.

3. Discipline and control of patients in curative workshops.

The student should be given imaginary cases of disabilities with physician's instruction for treatment and the description of the patient's education and experience. From this he must present a plan for occupational treatment, following the physician's instruction, and developing the patient toward the vocation suggested by the vocational expert. The student must show not only the patient's

occupation in the curative workshop but the method of presentation and development of instruction. These should furnish subjects for class discussion.

VIII. The curative workshop.

1. Equipment, upkeep, management, record keeping, and accounting.

2. Physiological value of occupational therapy.

3. Psychological value of occupational therapy.

The student should list equipment for different curative workshops and show diagrams of arrangement and prepare sample work charts.

As the continued flow of returning men necessitates additional instructors they may be recruited from the ranks of the disabled men themselves. There will be among the patients men with previous technical experience who have shown marked capacity in the curative workshop and who possess teaching ability. These will make the ablest instructors, provided they fulfill the requirements of teachers of occupational therapy. They understand more clearly than a civilian instructor the point of view of the returned man. The example, moreover, of one who has himself successfully passed through the experience of war and has overcome a handicap is a constant source of encouragement to the student patients. It has been said that no one better than a mutilé can train a mutilé. While a handicap overcome is a definite asset to a teacher of disabled men, and while many of the handicapped will undobutedly become teachers, a handicap must not be regarded as an asset offsetting other indispensable qualifications for an efficient teacher and leader of men.

The French method of using the reconstruction hospitals as training centers for instructors may be adopted with profit. The emergency course as outlined for the first instructors for returned soldiers may be modified in the new training centers and many theoretical points abandoned for actual practice teaching.

Before competently trained people will engage in this profession, and especially in the present war emergency, they must be assured adequate remuneration.

Mr. L. G. Brock, in telling of the importance of adequate teachers for the convalescent hospitals of France, says:

> It follows, of course, that if great demands are to be made on the instructors they must be carefully selected and adequately paid. The best possible men must be secured without regard to cost, and those who fail to develop the requisite qualities must be vigorously weeded out.

QUALIFICATIONS OF TEACHERS FOR DIRECTING OCCUPATIONAL THERAPY.

The courses of training as outlined are emergency courses only, designed to relieve the shortage of occupational teachers for the men who will return disabled from the front. The courses do not attempt to meet the problem of providing occupational therapy for civilian handicapped persons, who will in all probability outnumber the war victims by a large majority. Such training can best be provided in institutions offering long and thorough courses.

Since occupational therapy dovetails in many cases with medical treatment and either vocational training or employment, it is fundamentally necessary for the occupational therapeutist to have a background of both medicine and industry besides the actual knowledge

and technique of the profession. Many of the failures of occupational therapy in the past may be attributed to the fact that it has been attempted by those equipped with a background of only medicine or industry. This accounts for the lack of shop management and practical training when occupational therapy is directed by doctor or nurse; and equally for the lack of the patient's interest or therapeutic results when directed by a technical expert. The medical aspect of the problem is skillfully manipulated in the hands of the doctor or nurse, but they are usually ignorant of the variety of industrial processes, the demands of competition, and the economic conditions to which the patient must adjust himself. The shop boss or technician, on the other hand, fails to understand the connection between physical debility and impaired capacity. However well his shop may be organized or however expert his skill, he will fail utterly with the handicapped unless he has a medical and social background, an intelligent sympathy, and an understanding of the psychology of the handicapped.

An economic background is as essential for the occupational therapeutist as a medical and industrial background. He must know the relative value of commodities, how to effect economies in purchasing, the danger of an over-stimulated market, what markets are dependent upon fads, or the fickleness of the public. The danger of turning men away from real vocations by successful but superficial results in the curative workships may be thus avoided.

The director of occupational therapy must know something of several occupations so that he may have a variety of resources with which to attract the patient's attention. He must have a first-hand and thorough acquaintance with at least one industrial occupation and a general knowledge of several others, so that he, if the unit is sufficiently large, or his assistants will be able to hold the patient's interest and develop him in practical lines over a considerable period of time. He must know how to restore self-confidence in the discouraged, how to awaken ambition in the disheartened, and how to develop perseverance in the restless. Quick results are necessary for the encouragement of some, painstaking accuracy for the progress of others. The therapeutic value of a process is gone for some patients the moment they master it, and recovery is measured by the systematic change from process to process, each demanding more initiative or concentration. Continued practice, long after the mastery of the process, gives to other patients just that assurance and self-reliance necessary for recovery. The occupational therapeutist must know the functions of muscles, how they may be exercised, how the brain may be stimulated or relaxed, and how the coordination of body and mind may be produced.

The faculty for learning among the mature handicapped is slow; here infinite patience is required. Overexertion is particularly to be guarded against, and only the medical authorities should determine at what point it is safe to stimulate and force the patient. The best medical treatment may be nullified by strain or by failure to take proper exercise. It is, therefore, of the utmost necessity that occupational therapy be in the hands of one specially trained to understand these conditions and to carry out intelligently the doctor's instructions. Each disability has its particular limitations, possibilities, and methods of adjustment. The occupational thera-

peutist must be familiar with these as well as with the types of work which the patients will be able to perform on discharge, and the conditions under which it is advisable that they work. The cardiacs, for instance, must not be subjected to sudden muscular exertion, nor the tubercular to dust and fumes. The patients must be trained for those vocations in which their disabilities will be reduced to a minimum and their faculties increased to the maximum.

There is at present no standard course of training or qualifications for directors of occupational therapy. Several institutions give courses, but none are complete or adequate as training centers. Dr. William Rush Dunton, jr., president of the National Society for the Promotion of Occupational Therapy, has gathered together the opinions of those best qualified to speak in an article entitled "Training of occupational teachers and directors," published in the Maryland Psychiatric Quarterly for July, 1917. The consensus of opinion is that personality is the first qualification of a teacher or director of occupational therapy. The peculiar problems involved in working with the handicapped necessitate force, resourcefulness, tact, sympathy, and courage, and these can not be acquired in any course of training, however elaborate. Miss Gunderson, of the Bloomingdale Hospital, has said: "The successful occupation teacher or director owes more to her tact and personality than to her skill in crafts."

While personality is a foremost consideration in the selection of a teacher or director, it can not compensate for either lack of training or technique. Since occupational therapy is more and more becoming a part of hospital equipment, it is opening a new profession, and one for which the most careful training is necessary. The following course is suggested for the training of directors.

A high-school course is prerequisite. The course requires four years, the equivalent of two years of college and two years of distinctly technical study.

The time of the first two years is equally divided between academic and technical subjects. The purpose of the academic subjects is to give the proper background for the more technical work. These subjects include chemistry, physiology, anatomy, English, and economics. Physics and geometry must be elected, if not offered for college entrance. The technical subjects include mechanical drawing, design, and crafts. The course in design must be of the standard required for training professional designers. Not less than six hours a week for two years is required in design, of which one hour is a lecture on theory, three hours' practice in abstract designing, and two hours in practical designing. Six hours a week for two years is required for crafts. The first year includes the principles of several crafts—weaving, willow and raffia work, stenciling, block printing, leather work, and metal work. The second year includes a detailed study of metal work. Metal work is selected because it holds the greatest number of possibilities in the use of tools and processes, and is more closely connected than other crafts with actual mechanical operations. The work includes complicated and intricate problems, so that the student may acquire skill, touch, and technique, and the general principles of hard and soft soldering, casting, contraction, expansion, and annealing of metals, forging, and electric wiring.

On the completion of the first two years the student has a background and a technical knowledge of design and craft. The purpose

of the following two years is to provide special training for directing occupational therapy. One semester of the junior year should be spent either as a volunteer worker under a competent factory inspector, or, better still, on the pay roll doing factory work itself. No part of the student's training is more valuable than actual knowledge of lathes, machinery, quantity and quality of output, and industrial demands. The principles of the woodworking, metal, and building and electrical trades should be studied both in theory and practice. The academic subjects required for the remaining semester include psychology and sociology, together with a carefully selected list of medical reading relating to cause and effect, diagnosis, prognosis, and the special treatment of the most frequent disabilities with which the student will come in contact.

It is assumed that the student has already mastered the principles of design and is ready in the junior semester for a course in commercial design. The emphasis in the crafts is upon the making of a marketable product, the study of costs, overhead expense, economy of purchases, shop management, and utilization of waste products. The principles involved in commercial education are surveyed and record and bookkeeping are also studied in detail. One or two half days weekly in the semester are spent as a volunteer worker in the social-service department of a city hospital. The student receives his first contact with hospital patients under direction, and he becomes acquainted with their problems and methods of solution. It is desirable that he find employment for some of these patients, so that he may have the experience of approaching employers, encountering the difficulties of placing these people, and learning the tact and common sense necessary in the "follow work."

At the close of the third year the student's theoretical and practical background is complete. He has an economic perspective, a first-hand knowledge of industry, a medical understanding of the relation between pathological conditions and impaired capacity, and has had personal contact with the subnormal. He has a knowledge of commercial design and of the tools and processes not only in hand but in machine industries as well.

The first semester of the fourth year gives the opportunity for the study of pedagogy and for more medical reading, with special study of fatigue, function of regulated activity, and the mechanism of recovery through the psychology of occupation. The purpose is not to give the student sufficient medical knowledge to enable him to determine the treatment by occupation, but to enable him to carry out instructions intelligently and to cooperate in securing the results the doctor wishes achieved.

"The physician may prescribe occupation in a somewhat general sense, as, indeed, he might prescribe in the diet more protein and less carbohydrate; the decision as to whether it shall mean a dropped egg or a bit of beefsteak, less potato or less toasted bread, falls more naturally to the province of the nurse."[1]

While the doctor may recommend a sedative, or a stimulating occupation, or active exercise for certain stiffened joints, it is left to the skilled occupational therapeutist to decide whether the desired results

[1] Invalid Occupations, by Susan E. Tracy.

will be best accomplished and best suited to the vocational needs of the patient by typewriting, motor mechanics, drafting, planning, or agriculture.

The emphasis in design and crafts in the senior year lies in methods of teaching rather than in technical proficiency. The last semester of the fourth year is reserved for practice teaching under the direction of an experienced occupational therapeutist.

Such a course as outlined suggests ideal conditions in its cooperation with factory inspector and the hospital departments of social service and occupational therapy. If such conditions do not exist, the course of study might be shortened to three years and the student required to have some teaching and factory experience before becoming a director. The course might be shortened still further to advantage provided the student has knowledge of the type of institution and patients with which he would come in contact.

For instance, it would not be necessary for the student to have a knowledge of factory processes and industry if his patients are in a private sanitarium recruited from the leisure or professional classes. On the other hand, if his patients belong to the working classes, and come from the farm, the skilled or the unskilled trades, he might eliminate the design and crafts from his course of training and specialize more particularly on the therapeutic effect of industrial occupations and vocational education. A student already possessing technical knowledge or medical knowledge would be able to shorten the above course to a large extent.

Both men and women may become expert directors and assistants of occupational therapy. When classes are separated it is desirable that women teach women and men teach men. When, however, occupational therapy is given to really sick men, as occurs in many instances, women with the natural ability of the nurse have been found to make the ablest instructors. When men are able to follow a fairly regular course, and especially when it has a technical value, it is expedient that the instruction be given by men who are proficient in their lines.

Such a general course as outlined would necessarily prepare the student to be a jack-of-all-trades. This is desirable in the case of training of the occupational therapeutist who is unassisted and who must offer a wide range of activities. It is equally desirable in the training of the director of occupational therapy of a unit sufficiently large to include several assistants. The assistants should have specialized training in different lines. While they should be familiar with the kind of instruction necessary for the subnormal, they do not require the wide background described in the course of training for directors. Assistants may be recruited from the ranks of competent nurses with a knowledge of tools, or technicians with a knowledge of the problems involved in teaching the handicapped.

QUALIFICATIONS OF TEACHERS FOR VOCATIONAL EDUCATION.

In addition to the requirements of the regular vocational instructor, the instructor of the disabled soldier must know those points in which his soldier pupils will be different from the normal pupils to which he is accustomed. The shop instructor, even more than the instructor of related or academic subjects, must be highly skilled in

his trade for the reason that many of the men will have had experience in that trade and that, unlike the raw youth in vocational classes, they will be critical and unwilling to learn from one not markedly their superior. As a rule, the boys of vocational education age are eager, quick, and teachable, whereas many of the returned soldiers, though young enough to have receptive minds, are of maturer age. The fact that they have been returned unfit for further military service indicates that in some way, either by lessened vitality or permanent handicap, they are below par. Moreover, the experience of war has been a mentally paralyzing experience and the instructor must be patient and must understand his pupil. In addition to intelligent sympathy, the instructor must maintain regularity and meet the requirements of the vocational school, for vocational education leads directly to employability. The patients do not enter the vocational classes until the medical authorities have discharged them or else state that their physical condition will permit a regular course of study.

The duty of the instructor, aside from giving the technical information, is to take the patients, after their periods of convalescence, in which the demands of occupational therapy may not always have been as stringent as desirable and prepare them to meet the full and regular requirements of industry. Inasmuch as up to the time of discharge the patients have been more or less constantly under military discipline, and since they must enter industry as civilians the period of preparation for civilian life coincides with the period of vocational education. The instructor may be of valuable assistance during this trying time by maintaining a discipline in the school that is initiated and participated in by the patients themselves. He must, moreover, teach them to be self-reliant, to think for themselves, to work hard, and to observe hygienic rules of living which are self-imposed rather than commanded or ordered.

The best vocational instructors must be selected for training the disabled patients, not only because they require the best possible instruction but because the problem of teaching them is particularly difficult and important.

EQUIPMENT.

(*a*) *Invalid occupations.*—The equipment for invalid occupations is necessarily restricted to that which may be used in bed or a chair, and is of a very light character. Bed tables, slanting desk, and a bed bench are necessary. The slanting desk should be tilted to any angle which may accommodate the restricted positions of patients sustaining fractures, injuries, and deformities. The bed bench allows a small vise, and not only permits many occupations otherwise impossible for lack of the strength required in holding, but allows occupations for the one-armed.

The occupations possible cover a wide range, depending upon the patient's education and inclination. A typewriter will enable those patients who have become blinded or who have lost the use of their right hand to write letters to their friends, pass the time, and exercise stiffened fingers. Typewriting is an occupation of interest and profit. Other patients will be interested in the elementary principles of bookkeeping, salesmanship, mechanical drawing, mathematics, etc.,

while those without a rudimentary education may be benefited by learning to read, write, and figure. Whittling, bookkeeping, net and hammock making, leather work, and other light work requiring such equipment as small looms, hammer, pliers, paste, scissors, knives, raffia, twine, rules, paper cutters, letter presses, etc., are practical for invalid occupations.

(*b*) *Occupational therapy.*—Crafts, commercial training, education, and drafting require only a small outlay of equipment. As occupational therapy, however, attempts to give training of a practical type and to provide vocational education wherever possible in the trades, the equipment must permit at least the elementary stages of such training. The average small hospital will not be able to afford either an elaborate or extensive equipment for this purpose. In fact, even technical schools, with a variety of equipment, are not always able to teach all of the skilled trades, and the student must, in many instances, get his final instruction in the factory itself. Elementary processes, foundation work, and related subjects may be selected for trade training for the hospital unable to provide an extensive equipment. Simple processes, with a theoretical knowledge and an improved general education, are of practical value.

The problem of equipment is simplified in large county or State institutions. Not only is a large equipment needed to accommodate the patients, but the institution may economically afford to specialize in one or more industries giving real trade training and finding a market in other institutions as well as providing necessities for the institution itself. The repair and upkeep of a group of large institutions under direction furnish valuable training. Besides the opportunity of a possible machine shop, woodworking shop, farm, and care of building and motor trucks, printing may not only teach the essentials of the printing trade, but provide the printing of all record blanks, notices, reports, etc., for the hospital, as well as the printing of other county or State material.

Since the reconstruction hospitals will be located in different sections of the country and the patients will be sent to the hospitals suited to their needs nearest their homes, it will not be necessary to install all lines of occupations in industry, commerce, and agriculture in every hospital. For instance, the hospital in the Middle West would need agricultural opportunities rather than the textile trades of New England. Those occupations should be taught which are typical in the area to which the patients will return. Moreover, it is advisable to separate the patients according as their disabilities require special medical and occupational treatment. For instance, the blind are grouped together so that they may have the benefit of skilled ophthalmologists and the instruction of those specially trained for teaching the blind. They will, moreover, be taught only those occupations which it is practical for the blind to follow. The same is true of the deaf and the tubercular. It is desirable that the tubercular and gassed patients should have work of a light character, free from dust and fumes, and requiring deep breathing. Out-of-door work can be found for cured tubercular patients in rural communities or for those who wish to go to the land, while light work out of doors or in well-ventilated factories and offices may be secured for city patients. Only those industries which exist in a given area and which are suit-

able for orthopedic patients, or which are capable of modification, need be offered in the orthopedic curative workshop. Cases of neurasthenia, shell shock, and insanity should not only be separated from other cases, but from one another. Inasmuch as complicated and noisy machinery and intricate processes are not adapted to neurasthenic or shell-shock cases, the equipment for these curative workshops may be comparatively simple, including gardening and outdoor work, hand industries, drafting, blue-print making, general education, and only elementary stages in shopwork. Hopeless insanity may be provided for in the regular asylums. The general hospital would have to provide the greatest range of equipment in its curative workshop, but it could be limited to the industries in the district and omit those occupations particularly suited to the blind, deaf, tubercular, etc.

The upkeep of the reconstruction hospitals, all repairs, carpentry, glazing, plumbing, machine work, driving, care of motor trucks and gardens should be performed by the patients under direction as part of the course of training.

The responsibility of the Government to provide practical occupational therapy for the returning of the men to the industries from which they were taken will necessitate equipment suited to the purposes and needs for training the disabled soldiers in the curative workshop. The problem of equipping the curative workshop is unlike the problem of equipping the private, the county, or State institutions, where the outlay in expense must be considered in relation to possible returns from the shop, and where many of the patients, while benefited by occupational therapy, will never be able to follow wage-earning occupations. Unlike many of the patients in these public institutions, the majority of the disabled soldiers will be able to follow wage-earning occupations, provided that the occupational therapy designed for them is immediate and practical. It is a far-sighted economy to return men to industry by training them to be self-supporting and independent economic units, and to attain this end the Federal Government is justified in making a large expenditure for the equipment of the curative workshop. The problem of equipping the curative workshop becomes then one of intelligent expenditure and cooperation with other Federal agencies, so that the equipment may provide practical training in itself or else be of such a type as to prepare for subsequent vocational or factory training, which in turn prepares for employment.

PART II.

FUNCTIONS OF OCCUPATIONAL THERAPY.

It has been long known that treatment by occupation has a definite therapeutic value. Originally the benefit was supposed to be due entirely to the fact that such treatment "killed time" for the patient, but later it was found to have a definite effect on the mind and spirit, and consequently a favorable reaction on the physical condition. It was frequently observed that, while the patient's mind was absorbed in mastering an occupation in the hospital workshop, his interest was awakened, his ambition stimulated, his morbid and brooding thoughts eliminated, and his hope and self-confidence were restored. More recent analysis of the function of occupational therapy discloses the fact that, in addition to producing mental changes, it may also impose certain bodily changes.

Although the fields of the mind and the body are fundamentally related, occupational therapy may be considered from the point of view, first, of psychological functions and, second, of physiological functions.

PSYCHOLOGICAL FUNCTIONS.

In every functional disturbance, in addition to disorders of the central nervous system, there is a mental reaction. Pain, anemia, impairment of circulation, and sense impressions and emotions, such as anxiety and depression, are all communicated to the brain, which may be either highly sensitive or dull and apathetic, often showing such extreme symptoms as ennui, melancholia, restlessness, morbid introspection, discouragement, and fear. In ennui the tonicity of the muscles is affected so that they actually contract less strongly and develop less force. In melancholia the general physique, and especially the heart, is acted upon. Restlessness, or so-called nervousness and lack of concentration, is muscular activity of a wasteful type and gives rise to harmful fatigue. Morbid introspection produces a particularly vicious cycle of thinking, since continued attention focussed on any particular part of the body may actually increase its morbid condition. Discouragement and fear have a tendency to impair circulation, which may produce serious results upon the heart, digestive apparatus, and muscles.

It lies within the province of occupational therapy to regulate and improve some of these conditions. Ennui and melancholia, for example, may give place to a more normal state when the patient has become interested in an occupation. Inasmuch as those who suffer from ennui and melancholia are particularly susceptible to fatigue, the occupation chosen for their cure should be simple, and the treatment should be given in short periods in order to avoid

undue fatigue. Variety and more complicated processes are necessary, however, as the patient improves, and gradually the treatment should require increasing concentration. Again, restlessness, nervousness, and lack of concentration require the focussing of the attention upon constructive work. An occupation of a sedative or relaxing type which may have a certain degree of monotony about it which is not exacting and which may be pursued for long periods of time has a tendency to normalize. For the morbidly introspective patient an occupation must be selected which will turn away his accustomed line of thinking and at the same time offer sufficient interest and variety to hold his attention. Recovery may frequently be measured by the greater complexity of occupations undertaken each demanding greater application than the one before it. Discouragement and fear may be overcome by a simple or monotonous occupation, provided the patient masters it and continues to perform it with satisfaction to himself and with growing self-confidence and hope.

The mechanism of mental recovery by occupational therapy is simple. "But one idea can occupy the focus of attention at a given time."[1] In other words, an occupation which requires the patient's attention excludes, at least temporarily, all harmful thoughts. As Dr. J. Madison Taylor has pointed out:

> It is to the last degree unfortunate for the patient if suitable conditions are not provided with outlets for energies until evil mental habits have continued beyond the stagnation point where they may be radically corrected.
>
> All persons are subject to variations in self-control, to ups and downs of energy, impulse, emotion, action, judgment.
>
> Some minds are inherently well poised, but most have suffered greater or less derangement in normal responsiveness to external and internal impressions. There is then disharmony between receptibility, interpretation, impulse, and determination.

Such a disharmony leads to many complications but may be corrected if "volition can be made to precede action" and "decision and action made clear and enforced." Properly directed occupation can do much toward developing volition and its proper execution. It may, for instance, stimulate an idea.

> In some persons ideas spring to life in profusion, in perfection, and instantaneously; others require much time, and then ideation is often unclear. Training can do much to enhance or retard.[2]

The idea or sensation has a natural desire to express itself in action.

> If there be no image there will be no concept, and no concept can be formed without an accompanying motor outflow.[2]

It is the task of the occupational therapeutists to direct this motor outflow so that indecision, doubt, and fear do not prevent the logical execution of the idea. Execution may be guided during the performance of the occupation. As the patient progresses he should be given occupations demanding more intricate and difficult mental processes and requiring more rythmic, accurate, and deliberate physical movements.

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[1] Occupational Therapy, by William Rush Dunton, jr., instructor in psychiatry, Johns Hopkins University.

[2] Dr. J. Madison Taylor. Psychic Hypertension: Restoration of Mind Control by Motor Training in Relaxation. International Clinics, Vol. II, series 22, 1912.

Muscular energy is so closely associated with the integrity of neurons that all influences affecting them become of extreme significance, whether bearing upon mental or physical competency. Right habit formation is based on right guiding in motor impulses, and is essential to right thinking. * * * Perhaps in time mankind will learn that exercise is a normal and needed use of motor machinery, developmental, educational, or reparative.[1]

Muscular training and the development of the entire motor forces in action may be carried on by properly prescribed and conducted occupations for "work is the product of action, good work, of normality in the sum of actions."[1]

The mental poise, control, optimism, and activity thus newly acquired reacts favorably upon the entire body and facilitates recovery by assisting in such of the functions of life as nourishment, the production of digestive juices, and the cycle of metabolism. Prof. Amar[2] has noted in this connection that soldiers who have performed some praiseworthy act and are consequently happy recover rapidly from their wounds.

Amroise Paré, the great French surgeon of the sixteenth century, went so far as to say "the happy always recover." However exaggerated this statement may be, the fact is significant that contentment reacts favorably upon the entire physical system and that sadness or worry produces a condition characterized by muscular-nervous depression, inhibition, retarded respiration, and enfeebled heart and circulation.

PHYSIOLOGICAL FUNCTIONS.

Physical recovery is measured by the growing muscular power of the patient, his coordination, and his resistance to fatigue. Neither of these can be acquired suddenly; they must be developed by graduated activity.

Muscular exercise affords varied and valuable fields of usefulness. It relieves the heart by emptying the veins; it replaces fat by muscle, and thereby prevents the stagnation of blood and lymph in tissue which does not spontaneously expel it; it increases oxygenation of cells and tissues; and it enhances digestion and metabolism.

Activity is essential to health; it is necessary in rebuilding tissues and in the process of recovery. Dr. Taylor, in his Remarks on the Treatment of Chronic Disease, goes so far as to say:

Much can be achieved by bringing into line the functional power of the organs and tissues so as to secure the completest transformation of dynamic into kinetic energy no matter what the morbid agency.

Health and recovery depend to a large extent upon thoroughness of oxygenation. Faulty oxygenation results in accumulation of acids and toxins. While respiration is the basis of oxygenation, the muscular system is a powerful aid. Muscular activity produces deep breathing, and the oxygen acquired through the lungs and consumed by the muscles in contraction provides natural oxygenation and destroys acid products.

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[1] Dr. J. Madison Taylor. Psychic Hypertension: Restoration of Mind Control by Motor Training in Relaxation. International Clinics, Vol. II, series 22, 1912.

[2] Directeur du Laboratoire de Recherches sur le Travail Professionnel au Conservatoire National des Arts et Metiers.

The most powerful drugs can do little for ultimate restoration of capacity if the great oxygenating laboratories, the muscles, cease to play their essential cooperative part.[1]

All muscular activity is registered in respiratory functions. The deeper breath, the fuller heart beat, the quickened circulation are true tonics. The problems of oxygenation and oxidation can be made simple, and can be applied in the routine of daily work. For these reasons it is the task of the occupational therapeutist to direct the activity of the patient so that he shall benefit by the exercise of his occupation, adapting the exertions required in that occupation to the patient's changing physical condition.

When the gain in strength warrants further movements of the arm, trunk, neck, and legs, they can be employed with advantage, measured by time and forcefulness, rather than by the number and variety of movements.[1]

The proper activity of the invalid is most important, for the reason that his endurance is limited, easily fatigued, and his motor machinery tends "to lose range, scope, elasticity, and nicety of adjustment."

After acute illness there follows slower oxidation * * * and also, partly as a consequence of this, a habit of mind discouraging energizing, or there may follow injudicious impulses to action, the product of commendable zeal, yet imperiling tissues far from stable and which require wise training.[1]

The relation of activity to fatigue is fundamental; the weaker the patient the less his resistance to fatigue. Great care must be exercised that no strain falls on any part, for the body is no stronger than its weakest organ, and too great or prolonged muscular activity produces sarcolacite and carbonic acids in excess of oxidation, which may result in hyperacidity and subcatabolism.

The value of proper activity is so great and the danger of overdoing or doing the wrong kind of thing is so serious that no patient should undertake any kind of exercise or occupation without the order of the physician. The exercise should then be directed and watched by one skilled in this particular practice and trained to note signs of fatigue. It is the duty of the occupational therapeutist to restrain feverish and excitable attempts on the part of the patient or to strengthen languid motion, and, above all, to carry out the doctor's orders intelligently.

For instance, the doctor may prescribe certain movements of the arms. These movements may be accomplished by dumb-bell exercises, but they can be made far more effective and of greater interest to the patient if a hammer, plane, or saw is used instead. The weight of the tool, the nature of the material—iron, copper, etc., annealed or tempered; wood, hard or soft—all call for different kinds of exercises and varying degrees of energy. Different muscles are used in planing the top of a surface from those used in planing an under surface or taking off an edge. The patient may hold his body rigid, using only the muscles of his arm in hammering and expending as much energy on the down stroke of the hammer as in lifting it on the up stroke. In such a case relaxation, bodily rhythm, and coordination are impossible, and the arm must experience unnecessary strain and fatigue. On the other hand, the patient may stand

[1] Dr. J. Madison Taylor. Motor Education in Convalescence and Invalided States. Medicine, September, 1905.

with his weight on his left leg, provided this is in accordance with his physical condition, and feel the impetus from the ankle or toe of his right foot extend through and coordinate all the muscles of his body, which terminates in an even and rhythmic lifting of his right arm. The hammer, with nicely balanced head and handle, allowing vibration, describes an arc and falls of its own weight with a blow far more forceful than can be effected by using strength on the downward stroke, and thus the patient's strength is conserved by half.

The law of repose, as stated by Jules Amar, reads:

> The muscle returns to a state of repose in proportion to the speed with which it was exercised.[1]

The expenditure of energy is in proportion to the activity of the muscles, in relation to their coordination and contractions and the intensity, duration, and speed of their movement. All these factors determine the degree of fatigue, and must be considered in any attempt at muscular restoration.

The following laws of Chauveau may be noted in this connection:[1]

> The expenditure of energy is proportional to the effort of the contraction of the muscles, to the duration of the effort, and to the degree of muscular recovery.
>
> There exists the correct effort and speed to produce the maximum work with the minimum fatigue.

Occupational therapy may accomplish a general toning of the heart, lungs, vasomotor system; increase resistance to fatigue; develop physical efficiency by intelligently conserving wasteful energy; exercise particular parts to regain their functions; train sense organs which have become blunted by disorders of a nerve or traumatic origin; and improve the entire psychic condition of the patient.

INTERNAL DISEASES, INJURIES, AND POSTSURGICAL TREATMENT (NOT ORTHOPEDIC).

The method of building up the physique and of increasing resistance to fatigue necessarily differs for different types of disability. After eliminating disorders of the central nervous system, disabilities, from the point of view of their occupational treatment, fall into two main classes—first, internal diseases and injuries; and, second, cases requiring orthopedic treatment or surgery.

The most frequent disabilities included under internal diseases and injuries are tuberculosis, heart trouble, arteriosclerosis, rheumatism, kidney trouble, and general debility and surgical cases not orthopedic. The occupational treatment of each of these disabilities has many points in common, such as the gradual increase of nervous and cardiac tonicity by regulated muscular activity, improved mental condition, and avoidance of strain and fatigue. The doctor must, of course, prescribe the kind and extent of the exercise in each case. There are, however, a few important points to be considered in the occupational treatment of certain disabilities.

For instance, the emphasis must be on "graduated labor" in tuberculosis. This is advocated by Dr. M. Patterson, of Frimly, England. Progress in the cure of tuberculosis must begin with complete rest, necessary to check the disease, though ultimately weakening the muscles and bodily functions. When the patient is up and

[1] Translated from Organisation Physiologique du Travail, by Jules Amar.

begins his exercise it must be by prescription[1] of the doctor and increased from as short a period as 15 minutes once a day to 30, 45 minutes, 1 hour, 2 hours, etc., till the patient is able to work 8 hours a day at an occupation demanding a fair degree of muscular exertion. The occupation of the patient should be selected in no haphazzard way, but should be considered in the light of his future employment. The speed with which he may increase the periods of his exercise depends upon his temperature, pulse, sputa examination, and the observations of the physician. A work chart further assists the physician in showing the patient's methods of work, reactions, and fatigue.

"Cured, but unfitted for labor," is the chronic complaint of tuberculosis patients. This does not apply to those patients who have received occupational treatment during convalescence. Without such treatment patients not infrequently suffer a serious recurrence of the disease upon attempting a normal day's work with muscles weakened by long disuse in the sanitarium. The occupations for the tubercular should necessarily be light, requiring deep breathing, outdoors if possible, or, if indoors, in a well-ventilated room of even temperature and free from fumes, dust, and dampness.

The Association for the Prevention and Relief of Heart Disease[2] states that more people die from heart disease in New York City than from tuberculosis, and that the death rate from heart trouble is steadily increasing. Vital statistics of the Census Bureau show that heart disease is one of the three diseases causing nearly one-third of the deaths in the registration area of the United States.

Methods of treatment for heart disease are undergoing changes, but a proved method of treatment includes exercise, prescribed either by a heart specialist or by one who has had wide experience with the dangers, difficulties, and complications of heart disease. The emphasis in the occupational treatment of heart trouble, like that in tuberculosis, lies in the graduation of the exercise. There is no disability in which prevention and early treatment may play a more decisive part than in heart trouble. Adequate convalescence, graduated exercise, and proper occupation, with avoidance of sudden muscular exertion, may prevent heart trouble of a serious and hopeless type.[3]

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[1] At Muirdale Tuberculosis Sanitarium, Milwaukee County, Wis., an exercise permit card signed by the physician is given the patient when he is able to go to the workshop. It has been found to be a matter of psychology to head the card "exercise permit." The patients enter more enthusiastically into that which is permitted rather than required. On a bulletin board in the shop is posted each week the names of those patients who are permitted increased working hours. The patients take great pride in the bulletin board and post items of interest, such as work of patients in other places, suggestions of articles to be made, etc. The bulletin board has not only improved the morale in the workshop, but has created an interest and spirit throughout the entire sanitarium.

[2] The Winifred Masterson Burke Relief Foundation has made valuable contributions to the study of convalescence, not the least of which has been the convalescence and treatment of cardiacs. At the convalescent home maintained by the foundation, of which Dr. Frederic Brush is superintendent, 800 patients suffering from organic heart disease have been treated. Many of them have returned to productiveness after a record of months in the hospitals.

[3] The 1914 report of the Social Service Bureau of Bellevue and Allied Hospitals shows that, without adequate convalescence, occupation, and suitable work, "the progress of the 'cardiac' is a downward one if he is of the laboring class. His latter history is usually that of a 'hospital repeater' and dependent. * * * We accept his decline to misery and dependency as inevitable, not realizing that, even from the economic point of view, this is a wasteful attitude." Medical and social care of cardiacs has decreased the time spent in hospitals. They have lessened the patient's suffering, lessened expense, and improved industrial efficiency. A record of 6 cases showed that 251 days, or an average of 42 days per case a year, were spent in the hospital. Not a single day was spent in the hospital by the same 6 cases after entering the class for cardiacs. A saving of $439.25 was thus effected. Moreover, the earning capacity of 35 patients was increased from $12,477 before attending the class to $20,347.50 after attending, an increase of 71 per cent.

In arthritis the situation is somewhat the same as in heart disease. Much of this class will naturally be cared for along with heart disease, and heart disease is going to be covered in more comprehensive ways in the near future.[1]

Arthritis, paralysis, and deformities following nerve injuries, and selected cases of tabes dorsalis are benefited if muscles and joints are not allowed to stiffen and become inactive. Patients suffering from kidney trouble are liable to extreme fatigue and lassitude. Their occupation must be light, and they must not be exposed to cold or uneven temperature.

In all cases of general debility, protracted surgical dressing cases, and serious internal diseases, convalescence is an important feature of recovery. As Dr. Brush has said of convalescent institutions, they adopt the most effective restorative agency known "to the half-sick, the handicapped and subnormal, the failing, the depressed. * * * Sleep, exercise, rest, feeding, amusements, diversional and hardening occupations, companionships, care of minor ills, mental and moral slants, home betterments at the same time, and future employment are all studied and adjusted to the individual * * * and the results are inevitable and inspiringly good."

Dr. Brush describes his occupational treatment at the Burke Foundations, White Plains, N. Y. He says:

One soon learns that convalescence at best is fully half mental. Our occupation is considered not chiefly diversional but remedial, reconstructive, curative, convalescent, normalizing. It is not a side issue; it costs; it is our best medicine. It is prescribed, in writing, for more than one-fourth cardiacs, hyperthyroids, choreics, all the border mental and nerve folks, the inherently restless, all long stayers, the temperamentally difficult, the quitters, the pampered, the disheartened.

Of the result of the work cure he has said:

We have records of these people back at normal living. We are knowing that they were not lazy—only mislead, mismanaged, misenvironed. Now come the newer long-term and more testing phases, giving (ever with a small percentage of failures) end-products, which may be indicated as follows: Cardiacs who have been much in hospitals and dependence strengthened to maintain steady occupation; * * * nearly nervous and mental borderliners of many kinds, turned back by occupational and mental therapy principally to fair livability and content, * * * rheumatics in limited selection, given long terms, particularly for their hearts' sake, and at last sufficiently toughened for competition by graduated play and work, * * * various subnormal youths set forward with weight, blood, nerve, posture and character, and educational additions that are fairly permanent; protracted surgical dressing cases in large numbers carried to earlier and solider healing plus hardening for work, hyperthyroidism afforded long rest plus nerve and heart training with notably worthy results * * * these are some of the better and harder things now being done in convalescent institutions.

ORTHOPEDIC SURGERY.

The following classification of orthopedic cases corresponds to that which has been decided upon by the British Government and is the outlined classification of the Surgeon General of the United States Army:

(*a*) Derangements and disabilities of joints, simple and grave, including anchylosis.

(*b*) Deformities and disabilities of feet, such as hallux valgus, hallux rigidus, hammer toes, metatarsalgia, painful heels, flat and claw feet.

[1] Dr. Frederic Brush. The Convalescent Field—Its New and Changing Border Lines. Modern Hospital, June, 1916.

(*c*) Malunited and ununited fractures.
(*d*) Injuries to ligaments, muscles, and tendons.
(*e*) Cases requiring tendon transplantation or other treatment for irreparable destruction of the nerves.
(*f*) Nerve injuries complicated by fractures or stiffness of joint.
(*g*) Cases requiring surgical appliances.
(*h*) Cases requiring treatment of stump and fitting of artificial limbs.

Occupational therapy has a distinct and definite purpose in the functional adaptation and reeducation of many of these orthopedic cases.

The term "orthopedic surgery" is used in the comprehensive sense in which it is employed by Col. Sir Robert Jones, C. B.:

The modern conception of orthopedic surgery * * * may be broadly defined to be the treatment by manipulation, by operation, and by reeducation of disabilities of the locomotor system whether arising from disease or injury.

For lesions in and about the joints, the workshops are a valuable part of the hospital equipment.

In all cases, whether operation is necessary or not, the treatment is a lengthy one, since exercises are necessary for many months before the joints can be made to function properly. In such instances, workshops are a valuable adjunct to the hospital equipment since they furnish not merely vocational training, but the most effective means of exercising the injured joint.[1]

Static deformities cover a long period of treatment in which the patient is far from helpless and in which a better physical condition is maintained if he has proper exercises.

Bone injuries necessarily require a long period of convalescence. The modern treatment of many bone injuries, as differentiated from the old method, is that the parts when properly supported are not harmed by use, and that the danger of stiffening and functional impairment is lessened by the activity prescribed in the hospital workshop.

In the postoperative treatment of tendon injuries, it is necessary to have exact scientific knowledge as to when the tendon has healed so that it may be safely exercised. When the physician determines that point, exercise must begin and regulated active movements in the hospital workshop are then invaluable.

Nerve injuries require a long period of treatment in which the muscles must be kept in the best possible condition. The use of apparatus and extreme watchfulness in occupation often prevent the muscle structures from becoming either stretched or contracted.

The cases of amputations require a period sometimes as long as several months before the prosthetic appliance may be finally adjusted and fitted to the stump. During this period occupational therapy, with its properly directed exercises, must develop whatever latent power there is in the stump.

Characteristic of all these groups of patients is their chronic nature * * * in almost every instance, a lengthy postoperative treatment. The crippling nature of the injury, its long duration, the apparent inability to earn a livelihood, have all depressed the patient to a marked degree.[1]

OCCUPATIONAL THERAPY AND THE WAR INVALID.

The disability of the war invalids cover a wide range, including all those diseases, chronic and accute infections, mental and nervous

[1] Dr. Leo Mayer. American Journal of Care for Cripples, Vol. V, No. 1.

disorders, accidents, and injuries which are frequent in large general hospitals. In addition to these there are the particular disabilities of the war, shrapnel wounds, shell shock, gas poisoning, the effect of explosives, and the extreme prostration of trench strain. A close analysis of the three largest groups of disabilities—first, the war psychoses and neuroses; second, internal diseases and injuries; and, third, cases requiring orthopedic surgery—will make clear the reason why occupational therapy has been found to be more invaluable in the treatment of war invalids than in civilian patients.

Ten per cent of 4,000 cases surveyed in Canada were found to be nervous and mental cases. An analysis of these showed that 60 per cent were nervous, 25 per cent mental, and 15 per cent epileptics.[1] Fifteen per cent of the discharged men from the British Army are unrecovered cases of mental diseases and war neuroses.[2] Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, states that on the basis of 1,000,000 men overseas the country may expect 250 insane soldiers per month.[3]

The popular idea that every disabled man is a cripple is disproved by the figures of the interallied conference held in Paris May 8–12, 1917. These figures show only 167 cases of amputation in every 1,000 disabilities. Consequently 833 cases in every 1,000 are injuries of other kinds. The men are classified according to their most serious disability, but in 14 per cent or 15 per cent of all cases there are two or three or even four injuries. Blindness is given as low as less than 1 per cent of the disabilities,[5] and French figures give the percentage of blindness to be 0.05 per cent of all the soldiers engaged in battle.[4]

MENTAL AND NERVOUS DISORDERS.

The number of mental and nervous cases is misleading, inasmuch as only the acute forms are diagnosed as war psychoses and neuroses. Except in degree, they are not unlike many mild forms which exist in connection with many other disabilities.

The increased number of commitments to insane hospitals since the war is evidence of the unbalancing effect of war upon the civil population. It may be guessed to what greater extent the actual participants in the war are subjected to similar disorders.

The surgeon, Desault, noted that during the French Revolution diseases of the heart and enlargement of the aorta were increased. Prof. Amar says in this connection that the number of old people who died during the course of the present war has been greatly increased.[5]

In speaking of the psychic condition resulting from the present war, Prof. Amar further states:

> It has disturbed the higher nervous centers and has often prevented the proper functioning of the brain. It has inclined thousands of wounded to

[1] Military Hospitals Commission.
[2] Psychiatric Bulletin of the New York Hospitals, July, 1917.
[3] Conference Interalliee, Rapports.
[4] How France Returns Soldiers to Civilian Life, by J. L. Todd.
[5] The violence of the emotion, Prof. Amar explains, excites the bulb of the aorta and results in palpitation or syncope. The pneumogastric or vagus nerve starts in the medulla oblongata and its branches extend to the head, neck, thorax, and abdomen. Its activity impedes and tends to inhibit the heart, and this affects all parts of the body by a change in the amount of the blood which circulates through them. The brain is therefore affected and the cardiac phenomena are complicated by cerebral anemia and physical depression.

mental disorders, phobias, hallucinations, and different and rather obscure psychoses. Organic troubles and decay of nerve centers have become more frequent as a result of this terrible war than ever in the knowledge of man.[1]

It has long been recognized that a serious consequence of any long convalescence may be the mental depression and lassitude which renders the victim unable to adjust himself to normal life. This state of mind is further intensified when it exists in connection with a real physical handicap and when, in addition, the patient has been subjected to great nervous tension. The strain of trench warfare, the idle hours of waiting, the submission to discipline, and lack of individual initiative render the war invalid particularly susceptible to this mental condition.

Dr. Bourillion, head of St. Maurice, one of the most important French hospitals, has said:

Our young wounded soldiers, weakened by violent and prolonged sufferings, dangerous operations, and nervous shock have had their equilibrium rudely shaken and disturbed. Such shocks to their physical organization are bound to react on their mental and moral condition. * * * Add to this their isolation, their natural preoccupation in their own fate and that of those dear to them, and it will explain the kind of inertia, the decay of will power, and the apparent indifference to the future which gives the impression that the majority of them are incapable of ever again realizing the joy of work.

No medical treatment alone can solve the mental phase of the problem. It is peculiarly the field of occupational therapy.

Dr. F. H. Sexton,[2] of Halifax, tells of the incompleteness of medical treatment alone. In speaking of the soldiers in convalescent homes in Canada he has said:

We found that these men instead of becoming better under the medical treatment, were absolutely deteriorating mentally and otherwise and were in danger of becoming so hospitalized that they would never go back to their civilian work with any vim.

Therefore, we decided that they must have some kind of occupation and that they must have some kind of work. I do not suppose that there is anybody that does not know that work is the greatest curative in the world. So we began right away as soon as the military hospitals commission had an accurate idea of the situation and supplied some kind of occupation for every one of the returned soldiers. This was extended until it included even active cases in the hospital. The man who was flat on his back and could raise his hand was given something to do, if he desired to do something to while away the time and the medical officer had said he could take up some light work. * * * It was found to be so good for the men that after an experience of six months it was made compulsory, and to-day unless a man is excused by his medical officer he has to enter the vocational classes as part of his daily routine.

The curative workshops in the reconstruction hospitals help the majority of the mild mental and nervous cases to recovery, but those severe affections definitely classed as war psychoses and neuroses must undergo a long period of convalescence in which occupational therapy is an important feature of the treatment.

It is highly desirable that these men, to whom one is all the more indebted because they have suffered greatly and must suffer mentally and physically in the future, should imagine for one moment that they are herded into an asylum as incurable because they would be burdensome elsewhere. * * * The whole future of these patients depends on the care they receive. Given constant care and a well-thought-out system of functional reeducation, astonishing improvement may be anticipated in some cases.[3]

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[1] Translated from Organisation Physiologique du Travail, by Jules Amar.
[2] Address given in Rochester, N. Y., Nov. 15, 1917.
[3] Resolution passed May 11, 1917, interallied conference, Paris.

Dr. Salmon has said:

Few more hopeful cases exist in the medical services of the countries at war than those suffering from the war neuroses grouped under the term "shell shock" when treated in special hospitals by physicians and nurses familiar with the nature of functional nervous diseases and with their management. On the other hand, the general military hospitals and convalescent camps presented no more pathetic picture than the mismanaged nervous and mental cases which crowded their wards before such special hospitals were established. Exposed to misdirected harshness or to equally misdirected sympathy, dealt with at one time as malingerers and at another as sufferers from incurable organic nervous disease, passed on from one hospital to another, and finally discharged with pensions which can not subsequently be diminished, their treatment has been a sad chapter in military medicine.[1] As one writer has said, "They enter the hospitals as 'shell-shock' cases and come out as nervous wrecks." To their initial neurological disability (of a distinctively recoverable nature) are added such secondary effects as unfavorable habit reactions, sterotypy and fixation of symptoms, the self-pity of the confirmed hysteric, the morbid timidity and anxiety of the neurasthenic, and the despair of the hypochondriac. In such hospitals and convalescent homes inactivity and aimless lounging weaken the will, and the attitude of permanent invalidism quickly replaces that of recovery. * * * When the patients and staff have been suitably housed, attention should be directed to the highly important features of shops, industrial equipment, gymnasium, and gardens. * * *

Second in importance only to the general psychological control of the situation in functional nervous diseases is the restoration of the lost or impaired functions by reeducation. None of the methods available for reeducation are so valuable in the war neuroses as those in which a useful occupation is employed as the means for training. Reeducation should commence as soon as the patient is received. Thought, will, feeling, and function have all to be restored, and work toward all these ends should be undertaken simultaneously.

There is no class of patients for whom occupational therapy is more necessary and for whom the most skilled instructors should be chosen than this one.

Work[2] should be given only as a medical prescription; it should be prescribed only after careful mental and physical examination and with as much thought on the part of the physician as he would use in determining whether a given patient needs a vogotonic or a sympathicotonic drug.

"It seems that tools and machines were first introduced merely with the idea of giving the patients something to do. The hours and conditions of use were prescribed by the medical superintendent according to the condition of the patient. 'You can not conceive the difference in the condition of the men,' said one of the medical superintendents in the course of his evidence. 'It is simply marvelous how much happier and more contented they become with something to do. They eat better, put on weight, and submit to regulations more willingly, thus hastening their ultimate discharge. I have not had one-tenth the trouble with discipline since vocational training was installed.'"[3]

INTERNAL DISEASES, INJURIES, AND POST-SURGICAL TREATMENT (NOT ORTHOPEDIC).

The most frequent disabilities of returned men in the Montreal office are rheumatism, heart trouble, and tuberculosis. Occupational therapy has been found to have a definite physiological function in the convalescence of a large group of internal diseases and injuries. Prof. Amar has stated that deficiency of cardiac activity is particularly to be watched for among the older wounded soldiers.

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[1] When the sufferers from war neuroses have been allowed to return to their home communities, a serious social and economic problem has arisen, "so serious that a special sanitarium—the Home of Recovery—the first of several to be provided, has been established in London and subsidized by the war office for the treatment of such cases among pensioners."

[2] Dr. A. J. Ruggles, in Modern Hospital, June, 1917.

[3] Recalled to Life, No. 2.

It is necessary to know how to discover the cardiovascular and pulmonary affections in order to establish with surety the physical fitness and the degree of endurance of the wounded.[1]

The disabled soldiers are particularly liable to fatigue, and by graduated exercises their resistance may be increased and the degree of exercise that will not affect their organic difficulty be determined.

Occupational therapy is especially valuable to cheer the convalescing soldier and balance his nervous system, since his physical condition is not infrequently aggravated as the result of nerve strain.[2] After a prostrating experience he is subjected to the enervation of institutional life, and unless he is a very unusual patient he anticipates a "soft job," if indeed any job at all, little realizing that there are applicants far in excess of such positions, while industry is severely handicapped by a lack of skilled labor. Occupational therapy must help these patients to recover in every way by creating in them the desire to make the best of their conditions and by teaching them new trades or greater expertness in old ones so that their remaining years may be productive. These physiological effects of vocational exercises are now used with profit in the Austro-German hospitals under the name "Arbeits-therapy."

ORTHOPEDIC SURGERY.

There is no branch of medicine which has made more rapid strides of progress in the last four years than the science of orthopedic surgery. A new value and emphasis have been placed upon regulated exercise and occupational therapy. Occupation accomplishes more for this group than the somewhat negative function of passing time. It provides regulated activity and exercise of prescribed muscles which is necessary in functional readaptation or the reeducation of any injured part.

Experience in foreign hospitals has proved that functional readaptation is greatly facilitated in the hospital workshop. For instance, in cases of amputation—

> Reeducation of the stumps produces an improvement through a physiological state, readapts the patients, and combats the menace of nervous degeneration. It then permits the prosthetic apparatus to operate perfectly and with a better use of touch and muscle.[1]

The latent power in the stump is developed and trophic complications avoided by exercise. The extent of the injury and the result to be achieved call for different occupations and exercises. Walking, for instance, or the effort required in moving the shoulders or elbows requires force, a combination of muscular effort, and a series of small movements, whereas writing merely exercises the fingers.

An important war contribution made to orthopedics is properly directed exercise of a practical type in the hospital workshops.

Nothing has been more remarkable than the overthrow of the old-fashioned, purposeless orthopedic exercises for the cure of muscle weakness, stiff joints,

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[1] Translated from Organisation Physiologique du Travail, by Jules Amar.

[2] The attitude of the man is suggested in the following extract from Good News for the Disabled Soldier and Sailor, a pamphlet for the information of discharged men and printed in the first number of Recalled to Life:

"How different things are now that you are back in 'Blighty.' In the stress of life during your military training, and on active service, time passed too quickly, and you could not think of anything but just 'carrying-on.' But now, lying in bed or in convalescence, time hangs heavily on your hands and you begin to think, think, think. And doubtless as you feel yourself a shattered man, either handicapped by the loss of a limb or otherwise disabled, you carry your thoughts back over the past two years."

etc. Under the influence of the teaching of Col. Sir Robert Jones, C. B., useful manual work has largely supplanted the older system of mechanotherapy. The bench, the workshop, and the gymnasium provide for the active movements of joints and of limbs, in contradistinction to the, for the most part, passive movements of the appliances hitherto in use, while at the same time the patient, being provided with a useful occupation, lends himself more readily to the treatment prescribed for him and becomes interested in it. The chief point to remember is that each piece of work performed is a prescription ordered by the surgeon for a specific joint or muscle disability.

For instance, a man suffering from dropped foot instead of having to pedal a dummy bicycle now works a fret saw, foot lathes, or, in the case of certain injuries to the arm and hand, the man is put to work with saw, plane, or other tools and thus accomplishes himself, by means of natural movements, results which previously have only been obtained by means of massage, physical exercise, etc. Methods such as these are very successful, as it will be agreed that it is much easier to get a man better by a natural process than by an artificial one.[1]

Col Jones himself says, as a result of his experience in English hospitals:

As soon as the patient is fit to get about he should have some occupation both for his mental, moral, and physical welfare. Here the curative workshop is an invaluable aid to his gymnastic treatment. * * *

Excellent and useful as systematic gymnastic training is for developing movement, the training in coordination in doing purposeful work is what really brings brain and muscle once more into proper accord, while regular daily work reestablishes in the patient habits of responsibility and self-respect. * * * For example, a man with stiff fingers barely able to grasp even fairly large objects, is soon utterly wearied if set to grasp spring dumbbells or any other such apparatus, but will cheerfully spend the morning grasping a big duster and clearing windows. * * * Later, if he is a carpenter or other skilled tradesman, he is promoted to the use of tools he understands, and so the disabled hand is reeducated partly by set gymnastic exercises and largely by work.

Driving a plane in the carpenter's work can be employed for exercising muscles and joints in both arms and legs. * * * His brain is interested in what his hands are doing and not wearied by the curative action which the treadle movement brings about.

The experience of France, Belgium, Germany, Austria, Canada, and England has proved the greater value of active movement initiated by the patient himself over any system of Zander movements or mechanotherapeutics, however elaborate.

Of the orthopedic treatment in Canada Mr. Kidner and Mr. Todd have said:

Institutions carrying out functional reeducation employ treatment by active and passive mechanotherapy, by galvanic, static, faradic and high-tension electric currents, by vibration, by bathing and blasts of hot air, by baths of many kinds, by colored lights, by massage, gymnastics, and exercises of various sorts. Although such a variety of methods exist, opinion is universal in insisting that work, properly selected and graduated, has the highest therapeutic and psychic value and constitutes the best possible means of reaccustoming muscles and the mind to action. Whenever possible the work given—occupational therapy—constitutes an introduction to the vocational training, properly speaking, which will be given later should it be necessary to do so. Passive mechanotherapy is little used. Experience has completely demonstrated the greater value of active movement initiated by the patient himself.

A distinct accomplishment of occupational therapy and one which is not often realized is the conserving of the patient's energy. This is a matter of no small importance to the handicapped who labor under physical impairment and are subject to extreme fatigue. The

[1] A memorandum prepared by Sir Alfred Keogh, G. C. B., director general, army medical service for the Anglo-Belgian committee.

patient is taught to eliminate wasteful effort and is shown how to achieve the best results with the least expenditure of energy.

THE NEED FOR IMMEDIATE OCCUPATION.

The mental condition of the disabled soldier or sailor is such that if a delay occurs before he is given an occupation he frequently becomes institutionalized and unable to adapt himself to the thought of productive work. Unless the large margin of waste time in the medical treatment is occupied in some way from the very first, the patients will become "incurable loafers" and degenerate after a long convalescence into that chronic invalidism which is mental rather than physical.

The effect on the mental outlook of the wounded man is equally important. A soldier is either fit for duty or he is in a hospital. After lying in bed weeks or months while septic wounds have been slowly healing, he has often lost much of his spirit and initiative. If he is in a hospital where there is nothing definite for him to do, he is apt during his convalescence to learn the habit of getting through the day without doing anything more energetic than smoking, playing cards, and listening to a concert, or, if out, going to a cinematograph show. When, however, the patient is in an atmosphere of work he soon recovers some hold on himself and wishes to do something, especially when the satisfactory performance of his work earns some small extra privileges. As his power to work increases he ceases to think so much of himself as a maimed man, but begins to think of what he will be able to do in the future.[1]

It is of the utmost importance that occupation begin as soon as the patient is considered fit by the medical authorities. Experience has proved that the ease with which men become adjusted and employable is in direct ratio to the promptness with which reeducation was begun. Mr. L. G. Brock has said:

The question is desperately urgent. Habits of idleness are not easily shaken off, and if once these men are allowed to sink into despondency and apathy they will soon degenerate into chronic unemployables. Delay means wasted lives.

French experience shows that only 5 per cent of those who commence training in hospitals failed to continue, whereas 80 per cent took no training at all if training was deferred.[2]

The danger of institutionalizing can only be forestalled by the prompt action of enlightening the minds and sustaining the weakened wills of the long convalescent patients.

"Every delay," says Dr. Bourillion, "in carrying out this suggestion increases the chances of seeing them overcome by the evils of indolence."

THE PRESENT FIELD OF OCCUPATIONAL THERAPY, AND ITS POSSIBILITIES OF DEVELOPMENT.

Occupational therapy[3] is neither a new movement nor one which has suddenly come into prominence through a spectacular publicity campaign. It is, rather, a movement which has gradually developed by justifying itself over a long period of years. It was initiated by the doctors in insane hospitals who first dared the experiment of putting their patients to work; and by those other doctors who were groping after something which might give to their neurasthenic

[1] Sir Robert Jones, C. B., in Recalled to Life, No. 1.
[2] Bulletin No. 1, Année 1916, office National des Mutilés et reformés de la guerre.
[3] "The history of occupational therapy," by William Rush Dunton, jr., Modern Hospital, June, 1917, and "Occupational therapy, a manual for nurses," by the same author.

patients a healthy interest and a new grip on life. The healing value of occupation is so well established that occupational therapy is no longer confined to the insane or neurasthenic but has been found equally beneficent in tuberculosis, in long orthopedic treatments, and in extensive convalescences in a general hospital.

The crafts, with their variety and scope, are well adapted to the needs of the occupational therapeutist. A craft is quickly learned, the equipment is simple and inexpensive, and varying degrees of mental or physical exertion are possible. Art and craft are closely interwoven, and art especially affords a channel for self-expression which is in many cases the keynote of the success of occupational therapy. There is in the crafts just that poise, opportunity for creation, and interest in execution which on a first glance seems to counteract strain, overspecialization, and the monotony of the factory system. It is not strange that those doctors who see the disastrous by-products of modern industrialism should favor the crafts and simple hand industries as occupations well fitted for the hospital workshops. Occupational therapy has justified itself purely as a medical agent and has proved beyond a doubt the value of occupation as a therapeutic measure. The crafts have met all the therapeutic qualifications of occupations and the tendency has therefore been to consider them the logical channels of expression and to require a knowledge of art and craft in the training for teachers.

Occupational therapy has up to the present made no pretense to provide vocational training. Yet the instruction received during convalescence has been of direct economic value to a few patients who, after a hospital experience, have been better equipped for earning their living. The children's teacher in connection with the City Hospital of Cincinnati gave instruction to several convelescing young men, with the result that they secured better positions after leaving the hospital than they had held before, and a few even passed civil-service examinations. The reason that these cases are as rare as they are may be partly due to the fact that the institutions which have adopted occupational therapy are not, as a rule, those to which the working man goes, unless he be tubercular or a chronic invalid. With the possible exception of Massachusetts General Hospital, the City Hospital of Cincinnati, the Bloomingdale Hospital, the Philadelphia General Hospital, the Cook County Hospital (Chicago), the Latter Day Saints' Hospital (Salt Lake City), and a few others, they are either private sanitariums, dependent upon paying patients for support, or else county, municipal, or State institutions for chronic invalids or insane, dependent upon public support.

The patients in the private sanitariums are largely drawn from the leisure or professional classes. Although a few of these patients may later earn their living as craftsmen or craft teachers, none of them will, in all probability, enter the trades. For these patients the crafts prove a resource and meet all the needs of the occupational therapeutist. On the other hand, the majority of the patients in public institutions are so chronically subnormal that there is little hope of their ever engaging in competitive industry. The crafts are palliative for these patients; they help to maintain discipline, and, in some instances, they enable the patients to earn something under direction.

Thus it is that the two types of institution which have largely adopted occupational therapy are not those in which the laboring classes convalesce. With the exception of a few striking cases of patients who have found their occupational training in the convalescing shop to be of economic value, the majority of the patients of the laboring classes who have had occupational therapy during convalescence are rarely able to make any practical use of craft training, and consequently either return to their former trades or to new unskilled or semiskilled trades. If they do follow their craft training, their future is somewhat precarious, for in such cases they are dependent in a large degree upon the fickleness of markets, upon fads, or upon the generosity of the public.

The economic side of occupational therapy is only beginning to be appreciated. The report of the Henry B. Favill School of Occupations, the Illinois Society for Mental Hygiene, under the direction of Mrs. Eleanor Clarke Slagle, shows for the year 1916–17 that 25 out of 71 patients were placed in wage-earning occupations who would, without such aid, have been public dependents, and that these patients, together with those in attendance in the department and the sales from their work, have saved the State of Illinois for one year $21,430. One hundred patients, moreover, were refused for lack of teachers. When such results are possible, a community can no longer question whether it can afford such a department. but rather whether it can afford to be without it.

The present limitations of occupational therapy are, first, overproduction of certain articles dependent upon an unstable and varying market, and, second, failing to offer training of economic value to the convalescent workingman. In order to study how occupational therapy may, while retaining all of its therapeutic value, at the same time reach and benefit all classes to the fullest extent, it will be necessary to analyze the purposes of occupational therapy. It is, of course, impossible to cover the specific occupations and technique of teaching for each handicap, as the range of disabilities is wide, varying from the most obvious deformity to the subtlest psychosis and neurosis. There are, however, a few general principles common in the teaching of all. Occupational therapy aims first to create a wholesome interest in something outside the patient's morbid interest in himself and his symptoms; second, to fill the unoccupied portions of the patient's day; third, to prepare his mental attitude so that he may adjust himself to normal demands and environment after hospital discharge; and, fourth, to facilitate medical treatment by regulated exercise.

These results may be achieved by a large variety of occupations, and many practical vocations are quite as instrumental in accomplishing these as the crafts. For instance, soldering tin cans, joints, wire, tinsmithing, and electric wiring involve many of the processes used in metal craft, and the manufacture of leather goods, bags, belts, travelers' cases, and fancy commercial articles may be quite as interesting as hand tooling or illuminating. Bookkeeping, salesmanship, general education, stenography, telegraphy with bedside ominigraph may serve all the purposes of raffia work, tying knots, or other invalid occupations. Furniture making holds many of the possibilities of manual training and wood carving, while the study of the gas engine,

motor mechanics, and construction work has an endless number of possibilities. Commercial design, architectural drafting, sign painting, lettering, and printing have many points in common with fine-arts drawing and painting or stenciling and block printing. If the hospital is in the country or where patients come from rural communities, lectures and demonstrations of soils, principles of farm management, and sanitation of the dairy may pass many a weary hour. Wherever possible practice in the hospital garden, poultry yard, or orchard should engage the prescribed exercise rather than games, walks, or nature study. Such activities will meet all the requirements, namely, divert the patients' attention from himself, fill his unoccupied time, give him a wholesome mental attitude, and regulate his bodily activity.

There are, however, real dangers and drawbacks in introducing such work into the hospital curriculum. First, the danger of the choice of the wrong occupation; second, the danger of the wrong presentation of the right occupation; and, third, the harm of keeping the patient in touch with the same occupation, whose technicalities have possibly been the very grind and monotony which may have contributed to his breakdown.

The choice of the wrong occupation may have disastrous consequences, as a sound phobia would be intensified by telegraphy, nervous exhaustion increased by the close application of shorthand or bookkeeping, rheumatism accentuated by many of the strained positions of gardening, and the cardiac patient positively in danger in a machine shop with belts and possible uneven muscular exertion.

If the right occupation is selected, any therapeutic value it might have had may be nullified by failure to arouse the patient from his apathy or by overstimulation and exertion. It must be constantly borne in mind that the patient is temporarily or permanently subnormal, that he is unfit to acquire training in regular channels, that he comes to the hospital primarily to recover, and that all other benefits must remain entirely secondary to this.

These two dangers exist no more for practical occupations in the hospital workshop than they do for the so-called crafts. The success of occupational therapy does not lie in any particular craft or trade, but rather in the skill with which it is selected for the particular disability of the patient and the technique of allowing the patient's reaction, temperament, and fatigue to form the basis teaching.

The third danger applies strictly to practical rather than to semi-esthetic occupations. When the occupation can be so taught that it is not a repetition of the grind that the man has been subjected to but rather opens new possibilities to him and increases his earning power, it is not to be weighed in the balance with a mere resource, which in all probability the patient will never have time or means to enjoy. The further enriching of the patient's background by better education, by practical resources, and by a knowledge of hygienic living, renders his convalescence of lasting value.

The future development of occupational therapy is destined to include all classes and types of long convalescent disabilities and not only to assist in curative treatment but to take cognizance of the industrial world and to prepare the handicapped, so far as is possible, to become independent economic units.

PART III.

SOCIAL AND ECONOMIC ASPECTS OF OCCUPATIONAL THERAPY.

The purpose of occupational therapy is far deeper than to fill waste time, develop mental habits, or functionally reeducate muscles and joints. The value of occupational therapy in these respects is no longer debatable. It was proved a sound medical policy before the war, and the subsequent experiences of the belligerent countries have confirmed its earlier claims. But the social and economic possibilities of occupational therapy in the readjustment of the disabled to civilian life are of immediate importance. In addition, it is expedient to know to what extent the three stages of rehabilitation, namely, invalid occupation, occupational therapy, and vocational education, may interrelate and contribute to the ultimate goal of industrial rehabilitation.

ADVISABILITY OF PRACTICAL WORK.

Occupational therapy in this country up to the present has made no invasion into the field of vocational education. There are a few striking exceptions of men who have been better equipped for work after a hospital experience, but these cases are unfortunately rare.

The occupations selected for the workshops have been largely crafts. Difficulty has been experienced in marketing the patients' handiwork and in providing them with a future occupation which may follow if unable to compete in the usual lines of industry. These economic limitations have reacted upon the patients in many instances to such an extent that the full value of occupational therapy has not been realized. As Dr. Frederic Brush has said:[1]

> Success in mental convalescence is going to hinge on occupation, and occupational therapy is measurably failing everywhere because of lack of sales outlets for its products.

Dr. Thomas W. Salmon[2] has expressed the same thought:

> Nonproductive occupations are not only useless but deleterious. The principle of "learning by doing" should guide all reeducative work. "Continual resting," long periods spent alone, general softening of the environment, and occupations undertaken simply because the mood of the patient suggests them are positively harmful, as shown by the poor results obtained in those general hospitals and convalescent homes in which such measures are employed.

Experience in Europe has proved that if trivial and time-passing occupations are too long continued in the rehabilitation of disabled soldiers and sailors, men have been actually turned away from productive occupations and have taken up one of those "semitrades"

[1] The Convalescent Field—Its New and Changing Border Lines.
[2] Psychiatric Bulletin of the New York State Hospitals, July, 1917.

which are dependent upon charity or upon uncertain and fickle markets for support. Trinkets made by convalescent soldiers in France sold at prices far in excess of their actual value. Whatever ambition the men might have had for practical work was thus paralyzed and they continued to make these trifles long after they were physically able to perform work of a different type. The result was that the men's infirmities were capitalized and they were made dependents on public beneficence.

In Germany it is provided that there shall be no waste of time on useless occupations. The Krupps firm at Essen have established a curative workshop for disabled men under medical supervision. Dr. Tjaden said in a lecture in Bremen:

> The systematic influencing of the invalid's will power is of the greatest importance. * * * To employ the invalid for any length of time on trivial work does not seem suitable. It is much better to employ him at gainful work as soon as possible and to arouse in him consciousness that he still is able to perform efficient work.

Herbert Corey thus describes German methods of reeducation:

> The plan is to make every man self-supporting after the war, no matter how little of him may be left. It is infinitely better for the man and for Germany when the war ends. The Germans never forget the hideous nightmare of their present existence. It is recognized that the work of every hand will be needed. The man who has but one hand must be fitted to do his part for his country's sake if not for his own.
>
> During the latter part of the stay in the hospital of these torn and broken men they are carefully studied by the men who have made themselves experts to meet this exigency. Their intelligence, their education, their nervous reactions, everything about them is card indexed and tested. * * *
>
> When they have gained enough strength, the training for their future life work is begun. Practical Germany never wastes time on raffia and leather working and souvenir boxes and the rest of the tragic uselessness that the maimed men is too often set adoing. The German theory is that there is no active market for hideously ugly bags made out of knotted cord, or for hand-hammered tin biscuit boxes which counterfeit unconvincingly a silversmith's handiwork. Furthermore, the German theory is that the maimed man realizes this and that the heart is taken out of him by it. If he can do something—even a very little thing—which is of real use in the world, he chirks up and is happy. But if he feels himself condemned to be an object of charity for all his remaining days, the heart dies in him.
>
> So that whatever it is the mutilé is trained to do, it is at least practical and salable. He may only have one arm left of his original complement of limbs, but the poor remnant of what was once a man can still run a lathe. A man without arms and with only one leg is able to run a heavy press in a Bavarian factory, since it is directed by foot treadles. The training is conducted by real "efficiency experts," who develop the last ounce of capacity in the man and who are, of course, aided by the impassioned effort of the man himself, for he is invariably pathetically anxious to make himself a really valuable producing member of society again.
>
> Many of these men, according to my information from German sources, are earning more money than they did before the war. Very few, indeed, have had to be abandoned as wholly useless wreckage, to be supported by public charity until death shall release them. None of the mutilés are released from the army until their training has been completed, in order that they may be held under rigid discipline during the training period.

The expediency of commencing vocational education in the hospitals has been established by the experience of France, Canada, and Belgium. It has been found, moreover, that the men respond far better to work of a practical type in the curative workshop than to time-passing or trivial occupations. These have served their functions in invalid occupations by lessening the long hours, preparing

the patient's mind for real work, and in many cases actually giving practical work in general education and simple processes which lead directly to work of a more complex character in the curative workshop. In order that the handicapped man may be really convinced that there is a future of economic independence ahead of him he must feel that he is doing, however inadequately, "a man's job" from the earliest possible moment.

Before the vocational education was introduced, many of the men dreaded to be discharged and cut off from military pay and allowance, but since the classes have been well established some men who have gained new wage-earning ability from their acquired technical knowledge often welcome their discharge and boldly step into better positions than they ever occupied before.[1]

While the work is intended primarily to be curative for mind and body, experience has shown that many men with the development of mechanical skill have attained the ability to interpret blue prints, a knowledge of shop arithmetic and mechanical drawing, and that they have actually increased their commercial value in after life.

These things can be and are being imparted to men in the convalescent hospitals, and cases have already occurred in which men have returned to civil life and taken better positions than they held before enlistment in consequence of the training received during convalescence.[2]

In some cases this educational work in the convalescent home has been of such value to the men taking it that they have secured positions that pay them 50 to 100 per cent more than the ones which they filled prior to enlistment.[3]

The Dilution of Labor Bulletin [4] of the British Ministry of Munitions states that the handicapped men have passed from training into employment as gauge makers, tool setters, tool turners, tool hardeners, viewers, molders, millers, and core makers, skilled turners, fitters, capstan hands, aero erectors and assemblers, sheet-metal workers, and press workers.

The instruction in turning usually has included screw cutting, tool setting for capstans and machines, others have learned the use of plain, universal millers, grinders, cylindrical cutter grinders, shapers, etc. They learn molding, aluminum castings, and make heavy and complicated cores.

In Canada men have become concrete and sanitary inspectors as a result of training, and in Italy as well as Canada the men are learning to operate motor tractors instead of plows. In England they are learning to make and repair shoes by machinery instead of the old-fashioned and overcrowded trade of cobbling.

The need for trained oxy-acetylene welders has been felt in every country. Oxy-acetylene welding is, moreover, possible for men with leg disabilities and for the one armed, provided there is strength in the remaining arm to move the blowpipe over continuously long periods of time and provided that the artificial arm can manipulate filling material if such is necessary. In Germany in 1916 Mr. Theodore Kautny, director of the Royal School for Machine Building in Cologne, had trained 20,000 men disabled from the front to be expert oxy-acetylene welders. He devised a lightweight blowpipe for the use of these men. They were called "Kautny's

[1] Military Hospitals Commission of Canada Report, May, 1917.
[2] Monthly Review of the U. S. Bureau of Labor Statistics, October, 1917.
[3] L. V. Sharp, in American Journal of Care for Cripples, Vol. IV, No. 2.
[4] Vol. II, No. 1.

army." Great Britain has made a study of courses and methods for training her disabled for this important service. A serious shortage of oxy-acetylene welders at the beginning of the war faced this country. Not only are welders greatly in demand but the training is particularly suitable for many cases in the curative workshop. These men will render valuable service back of the lines, and they will also be skilled in an occupation which is destined to be of commercial value.

Polishing glass for asphyxiating-gas masks and lens grinding are other occupations practical for some curative workshops.

By proper organization of the reconstruction hospital this vocational training can be instituted as soon as the patient is able to leave his bed, and by the time he is ready to leave the hospital properly equipped with an artificial limb, he is also properly equipped for his trade or profession. Using the workshop as a form of medical treatment is one of the many ways in which the various departments of the hospital dovetail into one another and justify its existence as an organic whole.[1]

REMUNERATION OF MEN IN WORKSHOPS.

The remuneration of men doing work of commercial or marketable value in the curative workshop or vocational schools offers a difficult problem. Proper recompense has been found to stimulate the men. On the other hand, competition between men of different capabilities and with different degrees of handicap is obviously unwise. Furthermore, a man's future productivity may be increased by performing work of no commercial value during training and so a premium should not be placed on immediate returns.

There are difficulties of bookkeeping and also of the disposal of the articles made, where large numbers of men are concerned. There is also the serious danger of the goods being sold on a compassionate basis, and not at market prices. Also, if large quantities are produced for sale, there is the probability of protests similar to those made against the sale of prison-made goods being made against the sale of articles produced in the convalescent hospital workshop.[2]

When, however, certain disabilities are grouped together in special institutions, as, for instance, the insane, the war neuroses, the tubercular, the blind, etc., and work of a commercial value is prescribed, it is desirable that the men should receive some remuneration within these narrow limits.

At the Grand Palais in France the men are paid 2 cents an hour, increasing to 4.1 cents. They work for the army or the public or their work is sold commercially.[3] In Italy the soldier receives about 20 cents a day for his work in training.

In the workshops of the Royal Orthopedic Reserve Hospital at Nurnberg[4] a clever method of remunerating the men and at the same time preventing unfair competitive struggle has been worked out. The payment for work which is sold is based upon the usual rate of pay per hour. Instead of giving the money to the patients a notice is posted in each shop reading: "Your earnings will be used for the benefit of war invalids." In the Krupp's curative workshop at Essen

[1] Dr. Leo Mayer, in American Journal of Care for Cripples, Vol. V, No. 1.
[2] T. B. Kidner, address in Boston, Nov. 15, 1917.
[3] Monthly Review, U. S. Bureau of Labor Statistics, June, 1917.
[4] American Journal of Care for Cripples, Vol. IV, No. 2.

the men receive special allowances and in addition the customary rate of wages for all useful work.

New Zealanders undergoing training in England are not permitted to receive pay from employers on the ground that they have not been discharged from the army. The labor unions made trouble over employer's nonpayment privileges, and it was decided to pay their wages to charity.

In Canada in the carpenter shops of the military hospitals commission 25 per cent of the retail price of the article is taken for material and overhead expenses and the remaining 75 per cent goes to the soldier pupil. It is provided that the soldiers may draw 20 per cent of their earnings, 80 per cent being reserved for a fund to be given them on discharge. The patients receive work for repairing in the shoe shop, and those who take training in agriculture in Alberta receive returns from gardens and poultry yards.

In one district the proceeds (from the men's work) are put into a common fund, managed by a committee of officials and patients, the fund being used to purchase extras of various kinds for the men themselves. From another center there has just come in a suggestion that army profits accruing shall be handed to the Red Cross funds. My personal opinion is that if it be possible to arrange it a man who is industrious should receive some monetary benefit from his labor.[1]

Dr. Leo Mayer believes it best to pay the men a small gratuity and give them the benefit of the proceeds from the sales of articles made by them.

MARKETABLE PRODUCTS.

As far as is consistent with work prescriptions and vocational education it is desirable to have the men make marketable products. Armature winding and insulation of electrical equipment, massaging, and telephone operating with drop-shutter system have been found practical for the blind.[2] Massage tables, bed trays, hospital furniture, supplies, and repairs may be made in the workshops. Necessary plumbing, painting, glazing, carpentry, tailoring, and upkeep of automobiles about the hospitals should be included in shop instructions. Many men may be used in making artificial appliances in the curative workshop of an orthopedic hospital.

The foreign countries have combed the United States for makers of artificial arms and legs. It was found that one firm preferred to employ crippled men in the making of prosthetic appliances, for the reason that they made the most intelligent workmen, and their own experience afforded many helpful suggestions. Canada has established a factory at the new orthopedic hospital in North Toronto. The military hospitals commission found it necessary to train its own limb makers. Whenever possible men who wear artificial limbs are being taught and employed in the factory. As the limbs have to be repaired and overhauled, it is desirable that the men wearing them be acquainted with their mechanism, so they may make minor repairs themselves. Especially is this desirable for the men in rural districts who are far distant from a source of repair. The commission has a decided advantage in taking hold of the

[1] T. B. Kidner, in an address given in Boston, Nov. 15, 1917.

[2] After a few days' training these men are able to earn $2 per day on electrical plants. The masseurs receive $12.13 a week.

problem. The commission is able to secure the most up-to-date improvements, by arrangement with various patentees, and is in a position, should any patentee refuse to lease his rights, to require him to do so and to submit the matter to arbitration.

There is a considerable profit in the manufacture of limbs, a large proportion of which is devoted by the makers to advertising and sale, neither of which charges would fall upon the commission in connection with its own factory.[1]

In a Vienna hospital controlled by Prof. Spitzy no soldier with an amputation is given discharge until he has served four weeks in the department where artificial limbs are made and has received a certificate showing he can repair his own appliances. The ablest men are retained in the shop to be the teachers of new patients.

Here, then, is a practical and useful occupation for that group of convalescents in the curative workshops who need the therapeutic effect of work, but who do not need vocational training, and who will need to know how to repair and keep their own appliances in order. Inasmuch as there was a shortage of brace makers before the war, and as most of them have gone to France and England, the manufacture of artificial appliances opens a real profession for many of the disabled, at the same time filling a national need.

Dr. Salmon suggests for the workshops of patients with neuroses that—

It is desirable to begin with a few absolutely necessary things and to add those made by the patients themselves. When this is done every piece of apparatus is invested, in the eyes of the patients, with the spirit of achievement through persistent effort—the very keynote of treatment. The fact that it has been made by the patient's recovering from neuroses will help hundreds of subsequent patients through the force of hopeful suggestion.[2]

This seems especially desirable in the workshops for the war neuroses and psychoses, where the percentage of officers is relatively high and where they will return more probably to the professions than to the trades. Here, training is therapeutic rather than vocational.

OVERLAPPING OF STAGES OF REHABILITATION.

Occupational therapy in the rehabilitation of the disabled forms the vital link between medical treatment and vocational education. Medical treatment without occupational therapy and vocational education is powerless to accomplish industrial rehabilitation. Vocational education, on the other hand, can not effect rehabilitation after the completion of medical treatment unless the patient's mind was prepared during convalescence by definite occupation so that he wishes to become a productive citizen. So important a place has it come to hold in the treatment of war invalids that the following resolution was passed by the interallied conference held in Paris May 8–12, 1917:

In view of the constancy of the psychic factor in all matters relating to technical reeducation of the disabled, it is necessary in reeducation to unite psychotherapeutics with physiotherapeutics and to recognize the psychotherapeutic value of technical works. (Resolution No. 41.)

[1] Military Hospitals Commission of Canada Report, May, 1917.
[2] Psychiatric Bulletin, New York State Hospitals, July, 1917.

At the same conference—

All delegates were agreed on the necessity of having all physical training and treatment under strict medical supervision until such time as the patient is ready to be sent back to the Army in some capacity or another, or, if judged unfit for military service, is ready to begin reeducation of a purely professional kind.

The curative workshop is directly under the supervision of the medical authorities. The most cordial cooperation between the physician and the occupation instructor is necessary in order to secure the best results in rehabilitation.

Training and secondary treatment are interdependent, and at least in the earlier stages the training should be supervised by medical experts.[1]

Vocational reeducation prolongs and completes functional reeducation. They constitute together an undeniable physiological unity, but it is necessary that they form a psychological union in the sense that the wounded should be prepared from the hospital for his future career.[2]

Close collaboration between doctor and technical advisor is indispensable for complete reeducation; it is also indispensable for guiding the injured man and starting him on sound lines from the outset of reeducation. Reeducation must follow immediately after medical treatment and even overlap it.[3]

CONTRIBUTIONS OF VOCATIONAL EXPERT.

Since reeducation overlaps medical treatment, since work preparatory to vocational education, and even vocational education itself, exists in the curative workshop, and since these men must be guided from the first toward their future careers, it is necessary that the vocational officer be consulted as soon as the patient's general condition is good and prognosis fairly certain, otherwise there will be a tremendous waste of time, energy, and money.

The men have been recruited from widely diversified interests, occupations, and environments. They vary moreover in education, experience, and natural intelligence. The choice of an occupation, new or old, is a matter of serious consideration and must be jointly decided by the medical and vocational officers. Once the patient's vocation is determined upon, or several occupations are suggested for observation or practice in the curative workshop, it then becomes the duty of the occupational therapeutist to train the patient in those lines in so far as they are consistent with the physician's instructions.

Appendix V suggests blanks for charting the patient's vocational history, his record in the curative workshop, his vocational training at hospital discharge, and his later record in the vocational school, if such is necessary.

The convalescent patient begins with short periods of work, and as his recovery progresses the time required for medical treatments decreases, while the time for work increases. Just as occupational therapy utilizes the waste time between medical treatments and becomes more and more important as the patient recovers, so the duties of the vocational experts become increasingly important. It might be said that early in the convalescence the medical treatment is the chief concern, and as it diminishes in importance as the patient

[1] L. G. Broek, in American Journal of Care for Cripples, Vol. IV, No. 1.
[2] Translated from Organisation Physiologique du Travail, by Jules Amar.
[3] Bulletin No. 1, Année 1916, Office National des Mutilés et réformés de la Guerre.

recovers, the value of training increases in proportion, so that at the close of convalescence and hospital discharge training is the primary concern. From this point the patient enters either a civilian occupation or a regular vocational school no longer under medical authority.

In orthopedic cases it will be necessary for the vocational expert to be present when the functional power of a limb is determined by Amar's or other tests. From these readings and the predictions of the doctors as to the patient's future physical condition, the vocational expert must decide upon that occupation which is best suited to his infirmities.

In cases of amputation, such tests as Prof. Amar's are of great value. The purpose of Amar's tests is to determine:

I. The fitness of the stump for reeducation.
II. The amount of power in it.
Measured by laboratory experiments.
Arthrodynamometer.
Ergometric cycle.
Chirograph.
Dynamograph.
} Instruments used for tests.
III. Condition of senses, sight, touch, hearing.
IV. Condition of heart, lungs, nerve centers.
Test to measure respiratory changes as indicating degree of fatigue to which patient is subjected.
V. State of reflexes—speed or reactions—coordination.

The result of Amar's tests show that 80 per cent of the maimed or mutilated are capable of reeducation. Of these 45 per cent are totally reeducable with specialization, 20 per cent are partially so and 15 per cent fragmentarily. Future discouragements, makeshifts, and misfits are reduced to the minimum by the actual knowledge of the power and strength of the man. Functional abnormalities are overcome as far as possible and resistance to fatigue increased to the maximum before placement is attempted. Permanency and success logically follow.

The question of prosthesis is closely connected with that of vocational reeducation, for without comfortable artificial limbs the maimed can do no work. It is an art, or a science, which has progressed greatly during the war.[1]

A considerable period of time must elapse between the amputation and the final fitting of the artificial member or the completion of functional reeducation. This period will prove of value both to the medical and vocational expert in helping to determine the man's physical future through observation of his methods and disposition in the hospital workshop. Since the purpose of all appliances is to enable the man to follow either his old occupation or learn a new one, it is well to know at the time of selection for what occupation the appliance will be used. Inasmuch as the occupation is determined by the vocational expert, his cooperation at the point of selecting the appliance is most necessary. For instance, from the vocational point of view there are several points to be considered in the selection of artificial arms. There is, first, the necessity of any appliance at all, since many patients can best adapt themselves to some occupations without an appliance. Second, the effect on the appliance of possible devices in machinery and modifications in

[1] M. Hévys, Paris, in American Journal of Care for Cripples, Vol. IV, No. 2.

tools. Third, the question whether the type of appliance[1] shall be simple, durable, light, or mechanical, according to the work it will be called upon to perform. Fourth, the question of the nearness of the patient to centers of manufacture for repairs on complicated apparatus.

(*a*) *Occupational direction.*—The vocational expert has a distinct contribution to make toward rehabilitation. Together with the doctor, after consulting the patient for his preferences and interests, he must decide what occupation had best be followed. The doctor knows his physical limitations, the probable effect of that limitation upon his general health, the greater handicap of increasing years and recurrent illnesses. The vocational expert, on the other hand, knows the industrial handicap which the patient's disability will prove in competition with normal workers. In the choice of an occupation he will aim to utilize to the full the man's intelligence and the sound members of his body, rather than to depend upon the reeducation of a doubtful member. In many cases the wisest training will be to make skillful left-handed men, rather than to reeducate an impaired right arm or trust to an appliance.

In the main the one-armed must be led away from manual occupations. An artificial arm reduces output about 25 per cent. It is different with artificial legs. Men with amputated legs can stand at their work, provided the amputation was below the knee. Lesions of limbs frequently require more careful selection of trades than in the case of amputated limbs. Men with head injuries should be placed so that there may be no accident through dizziness and so that the posture does not aggravate the lesion. The handicapped should avoid occupations which have increased liability to accident and are hazardous for a remaining member, such as grinding for a man with one eye and stamping for a one-armed man. The vocational expert must decide whether the patient will be best able to continue his former occupation or undertake a new one, in the light of his former occupation, education, experience, social status, natural intelligence, and other characteristics. Whenever possible, the man should be directed into a former occupation so that all possible use may be made of his past experience.

The men for whom training will be necessary in new occupations are, first, those who have been previously employed in heavy trades or in those in which their disability makes it impossible for them to continue; second, those who before the war have been employed on juvenile trades; third, those who have shifted about, working at different jobs and unable to do any one thing well; and, fourth, those who before the war were classed as "unemployable" except in times of labor scarcity. Of the last class it has been said that if they could be put under military discipline and made to learn a trade they

[1] "The French have two arms, one for strength and one for skill," Jules Amar, Academie des Sciences Comptes Rendes, 1916, v. 162. The following devices are noted in the American Journal of Care for Cripples, Vol. IV, No. 2:

1. Grip designed to hold tool in any position. Modification enables mechanic to hold screw driver, hammer, and file (three different positions).
2. Gauntlet for cases of musclo-spiral paralysis.
3. Socket and stirrup for digging equipped with joint for raising and lowering.
4. Clip and block for stitching and putting covers on books.
5. Loom fitted for one-armed.
6. Stitching pad for boot work for man without a sound knee to press against.

Resolution 89c of the interallied conference, passed May 11, 1917, provides that "blind men who have lost an arm will receive the special knife invented by M. Lotz."

would become productive instead of a drain. Government control affords an opportunity to teach these men.

When a new occupation is selected it should be one whose processes are kindred to the old trade and whose tools and raw materials will be as familiar to the worker as practicable. If the patient comes from a rural community or if he will undertake an agricultural course, he should be persuaded to do so. The skilled trades offer the best possibilities for permanent employment. Unemployment is serious for the handicapped since they can not easily adjust themselves to the shiftings of the labor market. Only those men who are incapable of becoming skilled should be absorbed in the unskilled or semiskilled trades. The vocational expert knows what training will be adequate to prepare the patient for the selected occupation and what results may be anticipated upon the completion of training. He is, moreover, familiar with the trades and knows those which require degrees and kinds of muscular exertion as well as those in which there is dust, noise, fumes, vibration, dampness, dryness, exposure, and extremes or unevenness of temperature. The vocational man understands the opportunities for employment, for he knows what trades are standard, seasonal, and least crowded. When vocational experts have not directed the careers of the patients such serious mistakes have been made as that of France permitting 90 per cent of the wounded from rural communities to train for clerical positions. An active propaganda designed to attract returning men to the land is attempting to overcome this early blunder.

(*b*) *Classification of duties of vocational expert.*—The following classification indicates the duties of the vocational expert in relation to each group. He must know in advance which patients require only placing and which need either occupational therapy, vocational education, or both:

1. Disabled for service. Able to return to former work or work for which they need no vocational training.
   A. Placement.
2. In need of further medical treatment. Upon discharge will be able to follow former occupation or take up new without vocational training.
   A. Occupational therapy.
   B. Placement.
3. In need of no further medical treatment but unable to follow former occupation and new vocation necessary.
   A. Vocational training.
   B. Placement.
4. In need of further medical treatment and new vocation.
   A. Occupational therapy or prevocational training.
   B. Vocational training.
   C. Placement.
5. In need of permanent medical supervision or unable to compete in any regular vocation. Not totally disabled for special and limited work.
   A. Occupational therapy until cured as far as possible.
   B. Placement in workshop specially provided for this class.

CONTROL OF MEN DURING REEDUCATION.

The question whether control of the men during reeducation should be by military discipline is one of the most important and fundamental problems of rehabilitation. It is stated in reports of the interallied conference held in Paris in May, 1917, that the training is compulsory and under military discipline in France and Italy,[1]

[1] Training in Italy is required for six months only.

since the men are not discharged from the army and navy till their training is completed. Frequent references are found, however, to the effect that the men have to be persuaded to take vocational training in these countries. A recent visitor at one of the large reeducation centers near Paris states that the men are induced to take training by being allowed to stay in the shops where their friends are working.

Military discipline and compulsory training seem to have been only partially successful, while the French Minister of Education says:

> Very many disabled soldiers refuse to avail themselves of the facilities of "reeducation professionnelle" * * *. There is probably a very simple explanation to the puzzle of these conflicting statements; compulsory "reeducation" may be perfectly lawful in France, but may never or hardly ever occur * * *. In any case, however, compulsion of this kind is rare in France, if it occurs at all, and is recognized as generally impracticable.

Belgium is the only one of the allied nations which is able to enforce training during convalescence, due to the fact that the entire male population of Belgium is mobilized and that many of the men, having no homes to return to, remain as patients for long periods of time. The French Minister of Education also says:

> Still more instructive, however, is the evidence as to the great Belgian Institute for Disabled Soldiers, the largest and most remarkable institution of its kind that has ever existed. Here there is no doubt at all as to the propriety any more than as to the legality of compulsory training, but it is found to be ineffective as training. M. Alleman, the director of studies there, says: "Compulsion should never be employed. In certain schools 80 per cent of failures have occurred through misapprehension of this principle."
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> Thus, neither Belgian experience nor French bears out the idea, which not long ago had some currency, that the compulsory powers of army discipline can be used with advantage in training the disabled to new trades or professions.

In England training is neither compulsory nor under military discipline. In Canada the problem of control during reeducation has been more satisfactorily worked out than in any of the other countries. The men are under military discipline as long as they are convalescing in the hospitals and receiving occupational therapy in the curative worpshops. Upon discharge from the hospital they are given their pensions, which are based on disability, not on earning power developed in the workshop. The men who need further vocational training come under the control of the vocational branch of the military hospitals commission command. It is still possible to exert authority over a man if there is evidence that he will not apply himself to his work or if it appears that his environment and habits are such that the effects of his treatment will be affected. The men are, however, placed upon their own responsibility just as soon as it is certain that their health and future will not be jeopardized.

Disabled soldiers and sailors are men who have been accustomed to military discipline. Military life, with its obedience to orders, has a tendency to prevent individual thinking and to crush natural initiative.

> He shudders at the idea of entering an occupation again when he has to continuously apply himself for hours and hours every day, just to earn a mediocre living. * * * Military life is exciting, but ordinarily it is not really as hard as civilian life, except for a few supreme hours when called upon for great effort.[1]

[1] Dr. F. H. Sexton, address, Rochester, N. Y., Nov. 15, 1917.

A wounded Canadian officer, discharged from a hospital, expressed his surprise at finding that he had to think for the first time in three years when and where and what to eat. The return to civilian life is difficult and imposes a severe mental strain. Yet since these men must enter industry as civilians, the sooner they make the adjustment the better. T. B. Kidner, vocational secretary of the military hospitals commission, has said:

I feel that it is important that a man should be discharged as soon as he can think for himself, irrespective of the fact of whether or not his vocational training is finished. I am strongly of the opinion that the more you can surround the men with a civil atmosphere the better it is.

Partly for this reason and partly because the schools can not furnish complete training in all lines, it is desirable that part of the vocational training be taken in a factory under real working conditions.[1]

While we shall continue to do a great deal of reeducation in our own schools and classes, we hope to arrange that all reeducation cases shall spend, if not the whole, at least the final period of training in some commercial industrial establishment, under actual working conditions, punching the time clock regularly, and in other ways adjusting themselves once more to reliance on themselves and regular civilian ways.[2]

England has also found that it is advisable to adjust men to industrial demands in actual shops and factories. The Dilution of Labour Bulletin, issued by the ministry of munitions of England, states:

It must be remembered that a man, by losing a limb, does not necessarily acquire a fresh habit of life. Maimed men should, therefore, when possible, always pass through either an instructional factory or similar institution or a shop in which for a few weeks they can be sure of individual attention and tolerance, in order that they may acquire or reacquire the habits of shop discipline.

Canada has found that it is not difficult to maintain control of the men taking vocational education without military discipline. English experience is much the same. In both countries the men receive allowances during training, which are forfeited on failure of good

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[1] In France the men were given an allowance to live at home and take instruction in actual factories and shops.

"Apparently the plan did not work well for several reasons, among them being that no guaranty was given that real instruction would be afforded the pupil; neither was the position of the disabled always satisfactory in relation to the unwounded workman.

"Notwithstanding this, we are now endeavoring in Canada to carry out a plan whereby partially disabled men will be received into private industrial establishments for vocational reeducation.

"First, only limited variety of occupations can be taught in schools.

"Second, that in a very few cases is it possible to give training in school workshop on commercial lines." (T. B. Kidner, address, Boston, Nov. 15, 1917.)

When a man is apprenticed in Canada the Government assumes all risk and expense. The Government pays him regular salary, the employer not paying him anything until he becomes of use to the employer. When he does become of use the employer notifies the vocational officer that he would pay the man a certain sum, which reduces his pay from the Government just that much.

This arrangement would last for a year or until such time as the employer found the man would never make a competent worker. In such event the vocational officer assumes charge of him. The result is:

"The employer takes no risk; the patient is constantly learning. It costs the Government no more, and in the end makes a useful citizen out of an otherwise worthless one. It is strictly an economic problem so far as the employer is concerned, involves no financial loss on his part, and, if entered into in the right spirit by employers, will reduce the taxes for pensions enormously in the end." (F. B. Magbuson's report given before the Illinois Council of National Defense.)

In the boot and shoe repairing as well as in the hand-sewn boot and shoe making trades the British minister of pensions authorizes the payment of fees of 5s. and 7s. 6d., respectively, per week to the employer for the first six months of a man's apprenticement.

[2] T. B. Kidner's address, Boston, Mass., Nov. 15, 1917.

conduct. Of the actual working of the system in Canada, Mr. Kidner says:

> If a man absents himself from classes without cause, or he leaves the class, the district vocational officer warns the man that he may be liable, and that his course may be liable to be canceled. That is all the hold we want.

The control of the men during reeducation in Canada resolves into: First, control by military authority during convalescence and before hospital discharge; and, second, control decided in individual cases by the vocational branch after hospital discharge and during vocational education. It is recognized that the period of adjustment after hospital discharge is particularly perilous, and every effort is made during the period of vocational education to help the patient accommodate himself to the demands of civilian life. It is absolutely necessary that the amount of the pension be determined after hospital discharge, so that the men may enter on their vocational work knowing that no reduction will be possible and that any earning capacity they acquire will be in addition to their pension.

Inasmuch as the period of adjustment to civilian life is difficult, and since only about 20 per cent of the men have the opportunity to adjust themselves during the period of vocational education, it is evident that some kind of preparation for civilian life must be offered to the 80 per cent who will be able to return to their former work after convalescence without further training. The curative workshop, like the other departments of the hospital, must be under military discipline. Authority is necessary during convalescence so that the men shall not retard or even permanently prevent their recovery by excessive exercise or rest, wrong food, or bad habits. The "work prescription" must be enforced just as rigidly as any other kind of prescription. Beyond this point, and except in rare instances, there should be no recourse to military discipline.

> The greatest benefit derived by the men is the hardening of mind and muscle in preparation for civilian life. For many months they have not been compelled to think for themselves, nor have they been forced to think of their own food or raiment or the welfare of their families. For the greater part of the time the daily effort required in military life has not been as great as they formerly made in earning a living. After the pain and suffering of their wounds are allayed they spend many weeks in hospitals and convalescent homes in a state of pampered and glorified idleness. The classes fill in the gaps between the other items of routine, such as massage, physical training, etc., and produce a well-ordered and well-rounded day, much like the civilian life which they are rapidly approaching.[1]

In order that the men may as far as possible be surrounded by civilian atmosphere, the instructors should not be in uniform. The men—

> regard the uniform as a badge of military honor, to be won in actual battle experience, and although they have entire respect for a civilian expert in some particular line they would not have the same respect for the same civilian if they considered him masquerading as a military officer when not actually a military man. If expert civilians are to be used for this purpose, there is still another reason against commissioning them and putting them in uniform. This consists in the natural breach between the officer and the private.[2]

In Canada there are instances of men taken out of the military service to teach as civilians. One of the most important features

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[1] Military Hospitals Commission of Canada Report, May, 1917.
[2] Douglas C. McMurtrie, in the Survey, Nov. 3, 1917.

for the success of occupational therapy is the personal relationship of teacher to pupil. Rank is an invisible barrier and prevents a private from giving to an officer the intimate details of his life which may be important to the determination of his future career. When the officer or instructor is in civilian clothes, however, when he addresses the patient as Mr. ———, or calls him by his first name, and treats him as an equal, he inspires both friendship and confidence, and the success of rehabilitation in many cases depends upon just such contacts.

So the vocational officers establish over the men an influence more effective than cold and formal discipline. It is established by painstaking and individual attention, tact, an understanding sympathy, and personal force. Its establishment is costly in that the number of soldiers under such "discipline" by a given man is limited, and in that the strength of character and general caliber of the vocational official must be well above the average. Lacking in these qualifications, the adviser must be a failure in his job, and the quicker he is weeded out the better for his pupil veterans.[1]

The work during convalescence must be so interesting and instructive that not only will discipline be unnecessary, but that the men who will need further training after discharge will be willing and eager to undertake it. An unwilling pupil is unresponsive, and, in addition, a poor investment. Military discipline must be wisely and sparingly used lest it defeat the very purpose for which it is intended by forcing the men to work and prejudicing them against further training or civilian employment upon discharge.

The processes of adjustment involve a nervous reeducation in which occupation proves a more effective agent than either medicine or discipline.

Disciplinary troubles which are always present when a body of men have time hanging heavily on their hands disappear almost entirely when vocational classes are established. * * * As a pioneer in the field of occupational therapy on this continent has well put it, "a better job, or a job done better," is the motto for the self-improvement classes provided during convalescence.[2]

Civilian occupation is the best instrument for breaking down military habits and reestablishing initiative and continuous effort. Work properly conducted is the best form of self-discipline, as it should teach the patient to think for himself, develop his latent resources, inspire ambition, and, above all, create regular habits of industry and thought. Such habits must be self-imposed; they can not be commanded.

PERMANENT PROVISION FOR DISABLED MEN.

Permanent provision must be made for the medical treatment, vocational training, placement, and follow work for the disabled men.

Disabled men frequently become ill and have a recurrence of their disability. Such men must be allowed to reenlist for the period of their illness so that they may not run the risk of being in some charitable institution with themselves and dependents unprovided for. Any man who has been disabled in his country's service should be entitled for the rest of his life to whatever medical care he may

[1] Douglas C. McMurtrie, in the Survey, Nov. 3, 1917.
[2] J. L. Todd and T. B. Kidner. The Retraining of Disabled Men.

need in a military hospital. Such care should be followed when necessary by occupational therapy and upon recovery he should again have assistance in securing employment. Meanwhile his dependents should receive an allowance. Such provision will prevent an enormous increase in charity in the years following the war and prevent as well the once rehabilitated man from falling into the pitiful ranks of the handicapped after a period of illness. Follow work with a confidential guide of all disabled men is necessary to insure the permanency of rehabilitation and to prevent any duplication of effort in their behalf. France maintains a follow system through the national office. Canada is establishing a follow system for her reeducation cases.

The machinery built up to deal with war invalids will be valuable in conserving the health of the civil population after the war. Of the tuberculosis situation in Canada the military hospitals commission report of May, 1917, states that—

> The problem handled by the commission is largely a civilian one, and the result of the work which has been done should have a marked influence on the future.

DEMOBILIZATION.

The problem of demobilization is a complicated one. Every returned man placed and absorbed in industry lessens the difficulty, says Mr. Kidner.

> It will be found that in many instances any special machinery devised for dealing with the problems of disabled men can usefully be employed in meeting the problems of demobilization and employment after the war.[1]

VALUE OF CIVILIAN STRENGTH AND VITALITY.

The power of a nation lies in its civilian strength and vitality. The purpose of the rehabilitation of the disabled is to prevent the drain of dependency and to increase economic usefulness. There are two classes of men not included in the disabled from the front whose economic usefulness is quite as vital to the welfare of the country as is that of the disabled soldier. They are, first, the men returned from the front as undesirable but not disabled, and, second, those unfit for efficient citizenship as well as military service.

(*a*) *Rehabilitation of the "undesirable."*—A group of men so undesirable that they have been dismissed from the Army are hardly more desirable in a civilian community and their absorption into society is attended with serious dangers. That physical conditions are frequently the cause of misconduct and inefficiency has long been known. If these men can be put through a vigorous medical examination on their return, all possible abnormal conditions corrected, occupational therapy and vocational training given as necessary, these men, like the disabled soldiers, might be made serviceable.

The ministry of pensions in England has agreed that institutional treatment might be extended to men discharged for causes not attributable to war service.[2]

(*b*) *Rehabilitation of the "unfit."*—The conditions revealed by the medical examining boards for enlisted men show that four out of

[1] J. L. Todd and T. B. Kidner. The Retraining of Disabled Men.
[2] War Pensions Gazette, July, 1917.

every five men who volunteered during 1915 and 1916, and were rejected, were refused for causes trivial and absolutely remedial in the great majority of cases.[1] A plan has been proposed for the reclamation of these men.

A full realization of the meaning of man power and the tremendous wastage which is taking place in our Army is the thing that prompted the reclamation plan.[2]

When reclamation of these men involves prolonged medical or surgical care, occupational therapy followed by vocational training will enable many of these men not only to go to the front but to go with the training of skilled mechanics and technicians. The men not able to go to the front will be equally benefited to serve back of the lines.

It is already evident, however, that many other men would be glad to undertake vocational training and it is also clear from the records of the industrial history of the large majority of the candidates for reeducation that there is in Canada a great national need for vocational and industrial training in the country at large, apart altogether from the particular aspects of the question as applied to disabled soldiers.[3]

Canada estimates that every man who was broken down in training cost $2,000. At an estimate of the cost of $50 to reclaim a man, a hundred million dollars will reclaim 2,000,000 men, and thus H. P. Davidson, of the Red Cross, has pointed out that our national wealth will have been increased $30,000,000,000.[4]

(c) Rehabilitation of the industrially handicapped.—The industrially crippled and handicapped form a group at all times in need of rehabilitation. Kraus,[5] of Germany, claims that only 41 out of 100 accidental injuries could be accounted for after six years, showing complete readaptation on an improved economic condition. There are handicapped men who have been properly trained during convalescence and who look upon their vocational training as their greatest opportunity. Employers have found such men most valuable, as they realize the difficulty of securing another position and in their desire to compete they often surpass the work of a normal man. As Prof. Amar has noted—

The mutilé possesses always a perfectly utilizable capacity for some kind of work. * * * He may actually compensate for his physical deficit by an active good will, which increases his social value. This is a psychologic fact which must be turned to advantage.[6]

NECESSITY FOR OCCUPATIONAL THERAPY AT ALL TIMES.

Occupational therapy as a war measure must not be allowed to distort the present and future needs of occupational therapy out of their true proportion.

It is estimated by the Canadian authorities over-seas, based upon the experience of last year, that the numbers of men returning during the ensuing year will be at the rate of 1,200 to 1,500 men a month, or from 12,400 to 18,000 men for the year. In all probability the

[1] The Surgeon General's Report for the fiscal year ending June 30, 1916, in "Reclamation of the Rejected Candidate for the Army." Modern Hospital, December, 1917.
[2] Dr. J. H. Guayle. Modern Hospital, December, 1917.
[3] J. L. Todd and T. B. Kidner. The Retraining of Disabled Men.
[4] Modern Hospital, December, 1917.
[5] Journal American Medical Association, Mar. 31, 1915.
[6] Scientific American Supplement, Nov. 25, 1916.

number of disabled Americans will not only not exceed that of Canada for the first year at least, but be far less. In 1913 the number of industrial accidents involving more than four weeks' disability was 700,000. Industrial accidents have increased since 1913. On the basis of the conservative estimate of 1913, however, there are over thirty-eight times as many industrial accidents in a year in the United States as the maximum number of men expected to return to Canada in the next year.

The disabilities of industrial accidents have many points in common with the disabilities of war, and if occupational therapy is a war measure necessary for the returned soldier and sailor, it would seem to be just as urgent for the victims of civil disabilities, who outnumber the military victims by a conservative estimate of thirty-eight times. In 1910 there were 60,769 inmates in insane asylums. Except for a few splendidly conducted institutions, chiefly in Massachusetts, the practice of occupational therapy among the insane is far from ideal, yet the insane in the United States in 1910 were three times as numerous as the maximum number of men expected to return to Canada during the next year. In the same year 1,953,000 patients were treated in public and philanthropic hospitals in the United States and 2,440,000 treated in free dispensaries, a total of 4,393,000. One per cent of this number, or 43,930 patients, is double the number of disabled men returned that Canada will receive on her maximum estimate.

The war emergency and the widespread public interest in war cripples makes the present an opportune moment for the serious study of the possibilities of occupational therapy, and the standardization of teacher training in this field. Such a study will build a permanent structure which may provide for better convalescence and better vocational opportunities for all the handicapped. It was stated in the minutes of the first two meetings of the committee for reeducation of war cripples held in Paris in July, 1917, that—

> the institutions would not cease to exist with the conclusion of peace, but would then take up all questions relating to victims of accidents at work.

Prof. Jules Amar has said:

> The war will be over, but the industrial work and the necessity for the scientific study and physical organization of it will be with us forever.

There will always be the need for rehabilitation of the damaged human material discarded from the industrial world.

The economic and social problems which are crystalizing in the present emergency, as T. B. Kidner has pointed out—

> are only made more apparent through their being forcibly brought to our attention by the urgency of the disabled soldier problem if, for instance, any doubts exist as to the necessity for a broad and generous scheme of industrial training for the nation, the contrast in the outlook for the future between the disabled men who have been trained thoroughly in technical lines before enlistment and those whose only commodity was unskilled labor should remove them. On the one hand confidence and calm serenity, on the other, fear and dread of the future. We are already hearing of preparedness for the "war after the war."

Occupational therapy touches all those vital problems and must be utilized in the future, not only in healing and alleviating more extensively those whom it now touches, but in reaching all classes. For those in need of economic adjustment and training, occupational therapy may afford in convalescence the one great opportunity.

VALUE OF THE HANDICAPPED.

If the war should finally end in economic exhaustion, that nation may ultimately triumph which is best able to use over again her men. It is claimed that Germany uses 85 to 90 per cent of her disabled back of the lines, and that the majority of the remaining 10 to 15 per cent are entirely self-supporting. Belgium, whose depletion has been the greatest, was the first nation successfully to use over again her men. Not only has the large Belgian reeducation center of Port Villez been self-supporting, but in addition it has paid back to the Belgian Government the entire capital cost of installation. The men in the meantime have not only received 43 centimes per day, the regular pay of the Belgian soldier, but also 5 to 20 centimes per hour according to their work. In addition, surplus profits are funded for the men. Belgium before the war was one of the most highly trained countries in Europe. Forty-three trades are taught at Port Villez under the most competent instructors. A large part of the output, material, equipment, and tools made are for the Belgian Army.[1]

Economic necessity has made possible the results achieved in Belgium. For the other nations not so hard pressed the rehabilitation of the disabled and the strengthening of the vitality of the civil population may be an important and perhaps a determining point in their economic future.

If this problem is handled with good ordinary business judgment, if the soldier is treated in a straightforward manly fashion, without sentimentality or patriotic hysteria, he will find that his disability will turn out to be really a staff instead of a millstone.[2]

To what extent this Nation will be forced to use over again her men can not be determined. It is certain, however, that our economic future depends to a large extent upon the rehabilitation of those disabled both in war and industry. The services of the men disabled at the front are needed back of the lines and in the great task of reconstruction after the war. The channels of immigration are closed, and the drain on our own labor market is tremendous. The time has passed when the supply of skilled labor was as inexhaustible as our natural resources were thought to be. We can no longer afford to continue our former wasteful methods and we must conserve every vestige of labor as an economic asset.

LETTERS FROM REHABILITATED SOLDIERS.

Some of the men have voluntarily written letters to their old teachers, some of which testify to very considerable improvement in the man's wage-earning power. In giving the following details of the cases of a few soldiers the names are not mentioned for personal reasons.[3]

"As you know, for the past four weeks I have been at work in the tool room of the Dominion Bridge Co., and I just thought I would like to drop you a line to express my thanks to the military hospitals commission.

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[1] Fuse boxes which cost 30 francs apiece manufactured in the United States are made by Belgian cripples for 10 francs apiece, and give a profit of 2½ francs, or 25 per cent, to the establishment.
[2] Dr. F. H. Sexton, address, Rochester, N. Y., Nov. 15, 1917.
[3] Military Hospitals Commission Report, May, 1917.

"When I came back from the front in October, 1916, I was not able to read or write * * *.

"When the M. H. C. opened the machine shop at McGill I decided to take up the course, as I wanted to get a trade for myself. I had never worked on machines before, so I had a lot to learn, but I stuck with it, and when I got my discharge three months later I was able to secure my job with the Dominion Bridge Co. I received $21.10 per week since I started. The foreman told me this week that he was going to put me on a new machine and this would mean more money for me. I expect to get about $30 per week.

"If it had not been for the school I never would have been in the place I am to-day. Before the war, I was driving a team at $15 per week. I had also worked on a pile driver at $18 per week, so you see I am now able to earn almost twice as much as I could before. I hope all the returned boys will see the chances they have in the school and make the most of them."

No. 61013, Pvt. ———, Twenty-second Battalion:

"I was discharged yesterday. So, to my regret, I will no longer be able to attend your class.

"But, on the occasion, I wish to express my satisfaction for the good and practical instruction I secured from you, in connection with my trade, throughout my convalescent period.

"Before I enlisted I was an ordinary machinist, and I often realized then that I was lacking of some technical information, especially such as is related with shop sketching and the reading of blue prints.

"Now, I feel that I can go back to work with pride, because I have learned, through your instruction, to understand better the importance and advantages of my trade, and because I am assured that now I can work myself up rapidly and command better salaries and position.

"You have, Mr. ———, set me on this path and I wish to thank you heartily for it.

"Yours respectfully and obliged, and will you please send me a letter of recommendation of some kind; I will appreciate it."

The following letter was written by a man who was an excellent machinist, but had never been able to read drawings with any facility. After two and a half months' instruction in mechanical drawing, in which the man showed an extraordinary ability, he was discharged. He immediately stepped into a position as a foreman, because of his new knowledge, at a very satisfactory salary.

No. 51340, Pvt. ———, P. P. C. L. I.:

"Despite my 30 years of experience as a mechanic, I can state that, through your instruction and assistance, my efficiency and earning power were considerably increased.

"The fact is, that at the outbreak of the war, when I enlisted, I was earning about $3 a day at my trade. At present, since I am discharged from military service, I am, technically, a better man all around; I am able now to hold a job as foreman in a machine shop, with more than twice the salary I was getting before."

No. 24933, Pvt. ———, Thirteenth Battalion:

"This is to certify that prior to my enlistment for over-seas service I was employed with the Duncan Milk Co., of this city, receiving $12 per week as driver. I spent nine years on a farm. I always had a liking for drawing and felt that if ever I had the chance I would take up a course in mechanical drawing. This opportunity was offered me at the Grey Nuns' Convalescent Home, Montreal, where, after six weeks' constant application to the work, I am in a position to accept an appointment with the pensions board at Ottawa, with an initial salary of $75 per month."

Pvt. W. Rollerson, previously a stenographer, earning $70 a month; took a course of stenography and bookkeeping at Convalescent Hospital, Deer Lodge, and is now earning $1,000 a year. Employed in the customhouse.

Pvt. J. Bicknell was a polisher earning $60 a month. Took five months' course of commercial work and is now earning $87.50 as bookkeeper in the ordnance department.

Pvt. J. E. Billett was a general laborer previous to enlistment, earning a variable wage. He took a six months' course in woodwooking room at Deer Lodge and is now earning an average wage of $70 a month as a wood carver at the Alaska Bedding Co.

Pvt. Wilkie was a blacksmith's helper before enlistment. He took a short course in the blacksmithing and oxyacetylene-welding class at the Kelvin School and is now employed by the Winnipeg school board as a blacksmith and oxyacetylene welder, at a salary of $90 a month.

No. 22921, Sergt. ———, Twelfth Battalion:

"It is indeed gratifying for us (returned soldiers) to know that there is such a place as the vocational-training school, to which we can go on our return to Canada.

"I had the pleasure of being there for two months, studying shorthand and typewriting, and then, through your recommendation, I was able to get a very good position as visitor in the Montreal district office of the board of pension commissioners for Canada."

The following letters express the points of view of three grateful Englishmen and one Irishman.[1]

DEAR BOYS: I joined up on August 30, 1914, in the Royal Engineers and was wounded at Loos by a rifle bullet in the head, leaving my right arm paralyzed and at times severe pains in the head. I must say this made me very despondent and downhearted, and I did not look forward very hopefully to the future on my discharge from hospital. I believe I was one of the first boys to start a course of training for disabled soldiers. I must say that the careful instruction which we boys received greatly bucked and encouraged us for the future. I started work for the New System Telephone Co. under the chief engineer, who has greatly interested himself in me and other wounded soldiers to be telephone engineers. The work is of an interesting nature. I was a butcher before joining up, but having trained on for this new work I can now look forward to the future with a light and glad heart. I can only say to all the boys who may read this don't be downhearted. I was once, but not now. So cheer up, boys.

Believe me, yours, sincerely,

A. CLAY.

SIR: I left school at the age of 14 and then worked at a cement factory as a laborer. After serving six years and reaching the position of a leading cook I was blown up in the North Sea by the enemy on board H. M. S. *Lightning*, a destroyer, in which I was dangerously wounded and lost my right leg. I used to worry when I thought how I could earn my living the rest of my life, but after I heard there was a chance to learn a trade I cheered myself up and went in for handsewn bootmaking. I am sure there are good prospects in life once it is learned.

I have now finished my training of a year and am going into a job in the West End of London. I have been trained free at the Cordwainers' Technical College, where we had good teachers and are well cared for. I was pleased when I got my first 9s. 9d. for the pair of ladies' shoes I made. I can make all sorts, so I shall be able to take work all the year around.

Yours, respectfully,

CHARLES W. WOODING.

We went out to the Mediterranean and then to Gallipoli, where I was badly wounded and lost my right leg (very high amputation). My previous occupation having been that of a gardener, I began to wonder what I should do. I then joined a special course of electrical work whilst in hospital and went to a training center after leaving and got on so well that I got a good job at the C. A. V. Magneto Works, where I am doing very well; the work I have to do suits me, as I can sit down at it. I would advise everyone who can not go back

[1] Recalled to Life, No. 1.

to their old jobs to learn a trade. I am earning more now than I did before I joined up, apart altogether from my pension.

CH. E. JANES.

I was in the merchant service before the war, but joining the Irish Guards March, 1915, went out to France, took part in the fighting at Loos, and was wounded at Ypres. I got a shell wound in the shoulder which has rendered my right arm nearly useless. I took advantage of the offer of being trained as an electrician storekeeper, and after three months' training have obtained a good situation, and the work is quite easy for me notwithstanding my disablement, which prevented me following my former occupation.

F. POWER,
Late Irish Guards.

SUGGESTED REGISTRATION AND RECORD BLANKS FOR CHARTING PROGRESS OF PATIENTS.

The following blanks are suggested for charting the necessary data of each patient from his entrance in the hospital until his discharge and placement in industry, vocational school, or institution.

Hospital registration, Form 1, provides the patient's name, rank, and home address. It shows the handicap with which he enters the hospital, his previous education and training, his former occupation, income, and the possible future occupation he will be able to follow, with suggestions for vocational training or improvement. The social information will be of value in placing the men, and the opportunity for communicating with persons interested in the patient's welfare is provided.

The curative shop weekly record, Form 2, indicates the patient's changing physical and mental conditions, with physician's instructions and recommendations of the vocational expert. The observations of the instructor, which show the patient's methods of work, the quantity and quality of his output, will be of value in placing.

Hospital discharge, Form 3, is printed on the reverse of Form 1, hospital registration, which has already recorded such social history of the man as is desirable. Provision is made on Form 3 for showing changes in handicap, education, and vocational training since convalescence in the curative workshop. The patient's placement, whether in industry, vocational school, or institution, is recorded, as well as the persons communicated with and responsible for his follow work.

The vocational school weekly record, Form 4, shows the student's progress in vocational education and his qualifications for employment.

FORM 1.

HOSPITAL REGISTRATION.

Name.....
Rank.....No.....Company.....Regiment.....
Home address.....
Age.....
Nationality.....
Religion.....
Union.....

Society, club.....
Married or single.....
Dependents.....
Home conditions.....
Insurance savings.....
Character.....
.....

File No.....Medical case No.....
Date.....
Filed by.....
Name and address of employer, relative, friend (state which).....
.....
.....

Handicap.	Previous.		Former occupation.	Wages or income.	Possible occupation.	Vocational training suggested.
	Education.	Training.				

FORM 2.

CURATIVE WORKSHOP WEEKLY RECORD.

Hospital registration file No. .....

Medical case No. .....

Curative workshop record No. .....

Name..... Date admitted.....

Rank..... Dismissed.....

Date.	Physical condition.	Mental condition.	Physician's instructions.	Recommendations for vocational expert.

Observations.....

.....

.....

Instructor .....

FORM 3.

HOSPITAL DISCHARGE.

[Reverse of hospital registration.]

Curative workshop record No. .....

Handicap.	Education.	Vocational training.	Placement.			
			Institution.	Establishment.	Address.	Probable income and support.

Communications sent to.....

FORM 4.

VOCATIONAL SCHOOL WEEKLY RECORD.

Name..... Vocational record No.....

Rank..... Hospital registration No.....

Training for..... Date admitted ..... Date dismissed .....

Date.	Work done during week.	Quality of work.	Percentage of efficiency attained.	Observed effect of handicap upon efficiency.	Wages earned, if any.	Remarks.

Observations regarding character and qualifications for employment.....

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Placements.....

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